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INDUSTRIAL-ARTS MAGAZINE

Vol. V AUGUST, 1916 No. 8

Modification and Adjustment of the Courses in Art to Fit the Needs of Vocational and Industrial Education

Elizabeth V. Colburn, Teachers College, Columbia University, New York, N. Y.

PREPARATORY to a discussion of the present day art courses and their needs of modification and adjustment should be a brief consideration of such art education as has gone before, with an attempt to note its evolutionary tendency toward better things. Definite dates for these changes are unnecessary and, in a measure, unavailable since they have varied widely in their acceptance in different States.

The first art training in the United States was confined to the academies and colleges and was purely academic in its nature and content, developing only such powers as are needed for technical art work. It was about 1840 that the first drawing work was given in the elementary schools, where it consisted in copying minute geometric figures in order to gain ability "to see form." It was not until 1873 that any school for the training of drawing teachers was founded. This was at the Massachusetts Normal Art School. In 1882 the addition of object drawing and in 1890 the study of water color brought about the era when freehand drawing and painting from objects, nature and life was the joy of the talented art teacher, the Waterloo of many a grade teacher and the occasional success of the children. The result was shown in elaborate exhibitions chosen from the work of a few children, possibly one in forty, who by accident or talent had achieved the desired result. "Draw what you see," "Drawing is a language, a means of expression," "Art for Art's Sake" were the slogans of the art teachers and not so long ago.

Co-ordinate with the Manual Training movement came the mechanical and constructive drawing, first for high schools and later for the grades. In most cities it was a part of the Manual Training course and was taught by the Manual Training rather than the art instructor, which is probably as it should be since the art specialist lacks the knowledge of industrial processes necessary to intelligent instruction for working drawing.

An analysis of the art courses, which included only drawing, painting and mechanical drawing, with an occasional smattering of art history, resulted in the idea that there was a lack of training in appreciation, a lack of a feeling for good design or fine spacing, not only in pictures but in common things. So we added to the mechanical and freehand drawing a course in design in which the children of grades and high schools designed borders, surface patterns, etc., with no purpose except to learn to design. Occasionally some teacher of broader vision permitted the application of these designs to a book cover or a doll's house wallpaper but these were exceptions.

Out of these exceptions, out of an effort to correlate with the manual training and domestic art teachers' work and out of the growing desire to fit our art into life we began to let the children design and make things. So we revelled in arts and crafts or in applied design making stencils, woodblocks, tooled leather, art metal, etc. To be sure the objects were made in order to have something to which we might apply the designs rather than the designs to enrich objects, but we were growing toward the "fitness to purpose" idea which was a valuable addition to a course in design which had hitherto been for design's sake. A closer relation, but none too close, existed between the manual training and domestic art and art courses in that there were frequent occasions when the children were permitted to design in the art classes the objects to be made in the shop or sewing room. The failure of art teachers to understand mechanical limitations and the failure of manual training and domestic art teachers to see any need for beauty of proportion or line often caused failure in co-operation but it was more often attempted than not, because correlation was a very fashionable pedagogical term.

The demands of modern social and industrial conditions, and the constant attempts of educational institutions to adjust themselves to these conditions have resulted in a more vital course in design for all students; a course which endeavors to touch the home and community. Gradually the freehand drawing and painting as such are being left to art schools, private schools or high schools with special art courses; in the public schools they are used only as a means to an end, no longer as an end in themselves. The designing of costumes, schemes for

home decoration, posters, gardens, etc., follow a simple, practical course in which the principles of design and the theory of color are taught, sometimes with, and sometimes without, actual application to materials.

As all schools led to college in the past so all art study led to the studio life which claimed even fewer in proportion of our boys and girls than did the colleges. Now in a large measure all schools endeavor to train for citizenship and all art classes attempt to fit for the needs of a work-a-day world.

To a considerable extent the problem of art education in the lower grades may be solved by its correlation with industrial arts education. Thru such correlation children may learn to understand and appreciate the fundamental principles of industry, to design or decorate the objects made in these studies and to choose simple, fine colors and lines in their shopping expeditions, home projects, etc.

It might be well to describe one successful elementary art course which fits the needs of the lives of the children. In this course the children design and make bowls, rugs, chairs, tables, boxes, baskets, window-boxes, posters, curtains, folios, books and concrete flower pots. In the seventh and eighth grades their art problems deal largely with personal appearance and the home. By every possible point of contact their study of art principles is applied to the lives they lead outside of the school. "Their projects are illustrative of processes of manufacture. Their design involves a careful study of the principles of design, and examination of designs used today and a study of designs used by historic peoples. These topics are studied from the standpoint of the consumer, the development of intelligence and appreciation in selection. All will use from each field of art and industry but few will produce in each. The largest end point in the work is the development of good judgment and trained appreciation so that an idea is established for doing everything in a finer way." Few schools have gone thus far in relating art and industry but there is no doubt that the good work will go on since it is only one step higher in the way we have all been seeking more or less blindly but earnestly.

Industrial Arts Education cannot end with the lower grades, for the students who are not taking definite prevocational or vocational training will need in the night schools, extension schools and industrial schools courses in the relation of art and industry. Meanwhile the vocational high schools and technical schools in which we are endeavoring to train our youth to be not only self-supporting men and women but good citizens, have their right to some training in appreciation and good taste.

How to accomplish this in a vital, practical manner, how to find sufficient points of contact between art and the work-a-day world to give these students a standard of appreciation whereby they may make fine choices is a problem as yet unsolved.

A course which is entirely theory with no practice is obviously the wrong one, for these boys and girls are intent on knowing, "What's the use?" before they spend their time and strength on a given problem. If we must teach principles it must be with an obvious purpose, either in the application to objects or to the choice of objects. For instance a problem in spacing of lines has real meaning if connected at once to the proportions of a chair, the spacing of pictures on a wall, of lettering on a poster, of tucks on a waist, or flounces on a gown, etc. It is not necessary to "connect the work up" with everyday choices between the fine and the common-place. There is some tendency to insist on a course in design applied to the making of objects only. This is a mistake for the boys and girls need to choose and appreciate more things than they can make. A course in judgment in fine choices is needed, with as much application of design as is needed in the industries studied.

We have solved the question of a course in art appreciation for the girls by giving to them all an opportunity to design costumes, plan homes and to prepare for their future vocation as home-makers. These courses at their best will probably give to the girls such an appreciation as to increase their value in any vocation which calls for any measure of art judgment and appreciation. Unfortunately these vocations are few at present. In the Manhattan Trade School the girls are taught to design for the machine work and are thereby considered more valuable to their employers. However that does not seem probable because the machine workers are seldom permitted to exercise originality but are directed to make hundreds of waists from the same pattern made by a designer hired for that purpose by the firm. So it may seem that the average working girl has small opportunity to exercise her good taste save in the choice of clothing and the improvement of her surroundings.

For those of some vocations the training in appreciation is a valuable asset. The arrangement of goods on counters and shelves, the display of finer goods in glass cases, the tasteful and attractive grouping of merchandise in a show window, the ability to please customers by original and artistic suggestions as to color combinations are qualities which lift the shop girl above the average and help her to find better things to do, or to do her old work in a finer way. To the milliner, dressmaker, waitress and maid,—their ability to arrange lines and colors in fine combinations will add both to the pleasure and profit of their work.

However, in each vocation and profession women need appreciation more strongly in their capacity as consumers than as producers. In this capacity

also but on somewhat different lines, the men of our country need training in good taste and judgment.

A course in art for boys in vocational or trade schools and possibly for such girls as elect it, should include not only mechanical drawing in relation to shopwork but also a course in appreciation which might consider any subjects of special interest to men such as house-planning, advertising, lettering, furniture design, city planning, architectural drawing, shop-window decoration, book covers and magazine illustrations, study of simple designs for machine-made products such as electric fixtures, door knobs, iron gratings, etc., knowledge of woodwork, wall papers, rugs, etc. The use of lantern slides to illustrate any of the above mentioned subjects or to develop some knowledge and appreciation of fine pictures is a good method of adding to the interest of this work.

A course in photography might be a fine method of interesting boys in good spacing, light and dark and composition. The processes involved in taking, developing, finishing and mounting the pictures are decidedly educational and are interesting to boys. The tendency might well be to place an enthusiastic out-of-door occupation instead of other more or less questionable recreations. Altho not a vocational school there was given in a Normal School of Missouri a course in photography for the boys and girls from the farms who were taking a term or two of Rural Education and we found it was received with pleasure and profit. The making of lantern slides added much to the interest of the work. These students prepared slides to illustrate the courses given in the various departments such as Physical Geography, Art, History, etc. The art students learned to tint the slides. A moving picture machine was added to the equipment and the students took moving pictures of the school and town activities, pageants, ball games, fairs, etc. These were received with great enthusiasm by the large student body (1,000 students) because they were the work of our own boys and represented home interests. The moving pictures were also used in the daily assembly to show current events, scientific phenomena, industrial processes and occasionally a good play. It is surely within the realm of art to train students to appreciate and demand the best that can be produced in their familiar recreation, the "Movies." Whether or not this has been undertaken in any vocational school I do not know but it seems an interesting problem of art and industry with innumerable points of contact with other subjects and with the world's work.

Some knowledge of the theory of color will be of great value to both boys and girls and is generally included in the other art instruction such as house decoration, costume design, etc. It may be given separately in some towns where the industries are such as to make desirable a more complete knowledge of color. Such a course does not necessitate the use of colored crayons or water colors by the students but the use by the instructor of a large supply of inexpensive illustrative material such as samples of dress-goods, upholstering materials, curtain materials, wood stains, linoleums, wall papers, draperies, shades, and pictures of rugs and carpets if the real ones are not available. From these the students can select harmonies and develop judgment and good taste in color to a much greater extent than by painting rooms, or tinting oblongs and color circles to learn the theory of color.

To suggest a definite course of study in art for vocational, trade or industrial schools would be impossible because of the modifications necessary to meet local conditions and to fit the varying courses in other subjects. The lines suggested are indicative of the mode of attack but they make no pretense of being a final solution of a problem of ever-increasing complexity. We must endeavor to train all of the coming generation to be intelligent and appreciative consumers and we shall thereby insure a demand for finer quality in our products. "Art for Art's Sake" is a thing of the past. Let us hope for great things in our attempts to interpret "Art for Life's Sake."

THE law of worthy life is fundamentally the law of strife. It is only thru labor and painful effort, by grim energy and resolute courage, that we move on to better things.

—*Theodore Roosevelt.*

A TIME AND COST CARD SYSTEM FOR THE MECHANICAL SHOPS OF THE NEWTON VOCATIONAL SCHOOL

Conditions Necessary for the Successful Operation of the System

Gerald A. Boate

Note — One of the difficulties which continually present themselves in vocational schools is that of having students entered at irregular times; another is a problem of providing productive shop work for each pupil and at the same time have each student complete all of the work which he should in the trade. The series of articles which Mr. Boate will present, will describe quite completely the method used in the Newton Vocational School.—*Editor.*

(1) A feeling of confidence and sympathy between the Shop departments and the Drafting rooms.

(2) Co-operation of all constructive departments with the drawing department.

(3) Every job order must be accompanied by an office job card (See No. 1) and an accepted or approved drawing or sketch which is classified, card indexed, and recorded.

(4) Every blueprint or sketch issued to any shop must be boys' work.

(5) All constructional work is to be carried on as indicated by the blueprint.

(6) The drafting department is at the service at all times, of the shops. All drawings are of some part of our product.

(7) Job order cards will not be issued unless a definite idea of the article to be made is submitted to the System office, either by sketch, a definite idea in writing, or the object to be duplicated.

File No._____ **OFFICE JOB CARD** Date_____

Job No._____ Dr. No._____ Dr. List No._____

Name of Article_____ No. Wanted_____

Part_____

_____ Shop Date Started_____

Approved_____ Isnt Date Completed_____

Issued from_____ By_____ For_____

Remarks_____

Cost of Labor Cost of Material Total Cost

Card No. 1. A Shop Duplicate is also Used.

(8) That each job order shall have a "Shop Card" No. 2 properly started by an instructor, indicating the number of the job, taken from the duplicate Office Job Card, the name of the job, number required, material and the rough sizes. "Operations" should be entered in a logical sequence before the job is started. This card is placed in a card rack in the Shop where the job is to be constructed, and in a slot bearing the workman's name and his division.

Procedure: (1) The workman entering with his class goes immediately to the card file and takes out his "Job Card" No. 2 and "Time Card" No. 3, enters the time on the time card, his name and the job number taken from card No. 2, cuts his material the sizes indicated and enters its value on card No. 2. (Actual costs of all material used are accessible at the instructor's desk. The prices are entered on alphabetically arranged sheets, taken from the returned "Requisition for Supplies Sheets" which have been posted from recent invoices).

MACHINE SHOPS Date_____

Job No._____ Assigned to_____ Div._____

NAME OF JOB	No. Req.	MATERIAL	SIZES			Pounds	At	COST DOLLARS	COST CTS

Cost of Labor Cost of Material Total Cost

TIME ON EACH OPERATION

	OPERATIONS	WORKMAN	HOURS					Total	At	COST DOLLARS	COST CTS
1											
2											
3											
4											
5											
6											
7											

OVER

Card No. 2. A similar card is used for the Electrical and Woodworking Shops.

(2) The workman continues construction as indicated by operations, entering time on each. (Information from the time card is used for posting the workman's trade experience, which is based on operations. The latter is necessary in order that the boy's trade experience may be progressive and also that he shall not be kept on any one machine or operation too long.)

(3) See reverse side of all "Shop Cards." This record enables an instructor to analyze a boy's difficulty should a piece of work be spoiled, or should several pieces be partly completed by several workmen. (In the first case, should a piece of work be

No. Wanted_____ **OPERATIONS** Year_____

Job No._____ Name of Part_____ Div._____

OPERATIONS		No.	Date	No.	Date	No.	Date	No. Rec'd	No. Spoiled	No. O.K.
1	Rec'd									
Inst.	Forw'd									
2	Rec'd									
Inst.	Forw'd									
3	Rec'd									
Inst.	Forw'd									
4	Rec'd									
Inst.	Forw'd									
5	Rec'd									
Inst.	Forw'd									
6	Rec'd									
Inst.	Forw'd									
7	Rec'd									
Inst.	Forw'd									

Card 2. (Back.)

Printing Department
Newton Vocational School

Order No. ______
Date ______
Workman ______

	Hours
Composition	
Reading Proof	
Corrections	
Author's Alterations	
Make-up	
Holding Copy	
Stone Work	
Distribution	
Designing	
PRESS WORK	
Make Ready	
Feeding Press	
Bronzing	
Miscellaneous	
Total	

A

TIME CARD

Job No. ______ Name ______
Operation ______

	A. M.		P. M.		TOTAL
	IN	OUT	IN	OUT	
M					
T					
W					
T					
F					
	Total Time				

Operation ______

	A. M.		P. M.		TOTAL
	IN	OUT	IN	OUT	
M					
T					
W					
T					
F					
	Total Time				

Week ending ______

(OVER)

B

Operation ______

	A. M.		P. M.		TOTAL
	IN	OUT	IN	OUT	
M					
T					
W					
T					
F					
	Total Time				

Operation ______

	A. M.		P. M.		TOTAL
	IN	OUT	IN	OUT	
M					
T					
W					
T					
F					
	Total Time				

Operation ______

	A. M.		P. M.		TOTAL
	IN	OUT	IN	OUT	
M					
T					
W					
T					
F					
	Total Time				

C

Card No. 3. A—used in Print Shop.
B—Front of General Time Card.
C—Back of General Time Card.

spoiled, the instructor can instantly find the difficult operation and assist the workman to analyze the situation and determine the cause.)

(4) In cases where there are several pieces to a machine the job numbers for the component parts are numbered decimally.

(5) When jobs, or portions thereof, are completed the Shop Record Sheets are posted from the Shop Cards, then the Duplicate Office Job Card together with the Shop Cards, are returned to the recording office, which is in the drafting room. Here the cards are again posted on the sheets which are kept to determine the product and its constructive cost, as well as its commercial value for the school year.

See Chart No. 1 for routing.

(6) In the recording office a record is kept of all supplies purchased by each shop department. A ledger account is kept with each shop department. On the debit side is posted the instructors' salaries and the cost of all supplies.

The credit side is posted from the shop job record sheets, the equipment manufactured at the prices which would be paid if the goods were purchased from the open market. The shop, or school, is reimbursed by the School Department an amount equal to the value of the product manufactured at market prices.

The difference between the two ledger columns shows the actual yearly cost of running each department.

At present two shops in the Newton Vocational School are self-supporting and a third shows a profit.

At the close of the school year the patternmaking will be charged to the machine department, when a balance is taken off the ledger.

All patterns constructed in the patternmaking shop are of parts of machines drawn by pupils. The castings from the patterns are all used in the machine shop and the machines as completed, form additional equipment. In the patternmaking shop there is absolutely no duplication of patterns. Each is part of a definitely planned piece of equipment.

Objects of the Shop System:

Classification ______ File No. ______ DRAWING LIST No. ______
Pages ______ Page ______
Date ______
Compiled by ______ Checked by ______ Pattern or Piece No. ______

	Name of Part	P'c's	Material	Clas.	Drawing No.	Part

Notes

Shop Record Sheet to which Card Records are Posted.

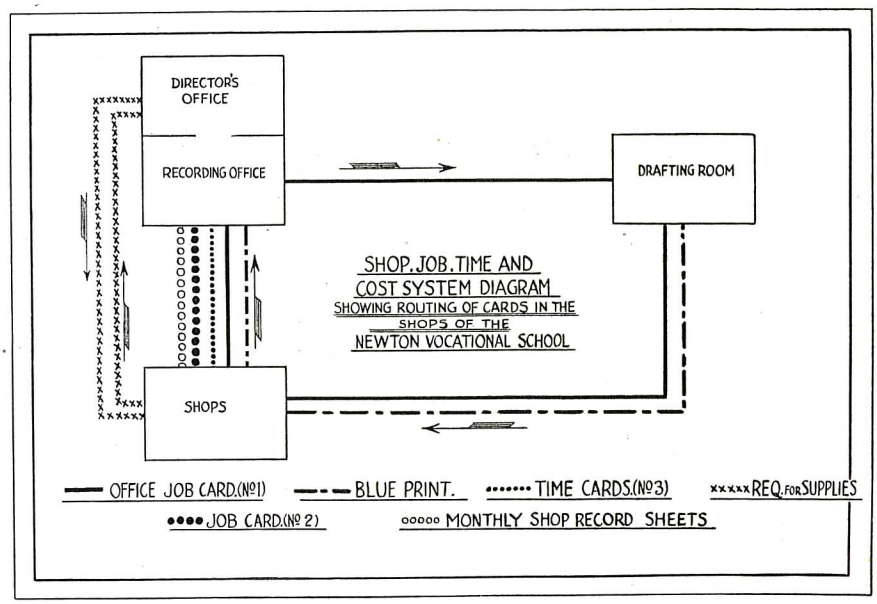


Chart No. 1. Route followed by cards thru Newton School Shop.

I. To give boys an appreciation of time and cost of material.

II. To enable a project to be carried to completion.

III. In order that absolute records of trade experience may be accessible to all interested in the school and its object.

IV. To increase efficiency, eliminate waste and discourage indefinite haphazard methods of construction.

V. To train workmen to analyze time, costs and constructional methods, and to familiarize them with progressive manufacturing methods.

VI. In order that each department will obtain full credit for its achievements.

VII. By means of the records and shop cards, all instructors who aim at correlating may obtain definite information which will assist them in getting into touch with shop aims, objects and "atmosphere." See correlation chart No. 2.

VIII. In order that the true cost per pupil, per period, may be determined in the various trade subjects. If the energy of pupils is directed toward the production of useful equipment of commercial value, the cost of instruction in such a department will bear favorable comparison with other subjects in the curriculum, which require as much equipment but less supplies.

Shops Systematized:

Machine Shop L
Machine Shop M
Machine Shop G
Patternmaking Shop F
Electrical Shop C
Cabinetmaking Shop A
Printing 18.

What We Make of Value:

Print Shop—

All school printing for three high schools and 22 grammar schools.

Cabinetmaking—

70 drawing tables
3 100-drawer household arts kitchen cabinets
3 special kitchen tables
3 schoolroom "book racks"
12 tool cabinets
2 Silverware cabinets
2 drill cabinets
2 gymnasium cabinets
25 lathe tool trays, etc.
45 tablet-arm chairs
Value $2,240 to date.

Electrical Shop—

Care of electrical clocks and bells in twenty-two grammar schools and two high schools. This alone cost the city $1,200 per year when attended to by an electrical concern.

The care and installation of all electric lights in all city school buildings, inter-communicating telephones, 60 generators and motors in the Technical School Building, etc.

Patternmaking—Complete patterns of:

Watch tool lathe
8″ wood turning lathe
12″ engine lathe
Bench milling machine
Belt sanding machine
Bench jointer
Arbor press
Bench shear
Bench grinder
Brooching press
Sensitive drill

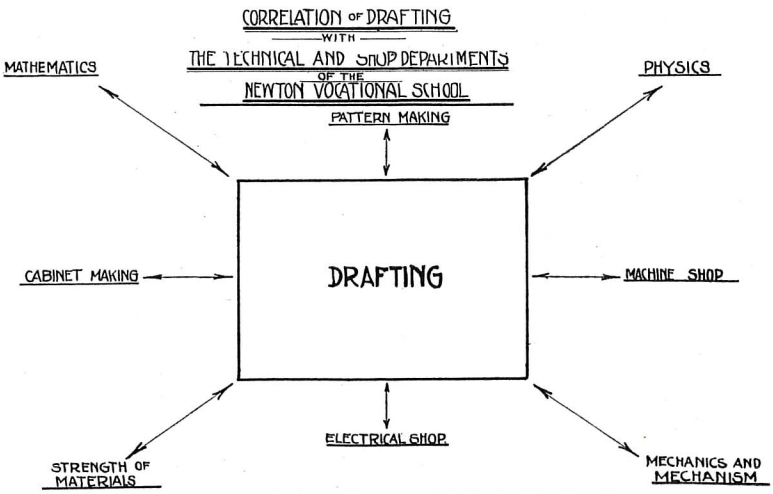


Chart No. 2. Correlation of Departments in the Newton Vocational School.

Posture tracing machine
Jig saw
Power hack saw
Lever tail stock 8″ wood turning lathe
Countershaft pulleys
Metal drawers (mach. shop benches)
Metal lathe pans
One h. p. motor
1-15 h. p. fan motor, etc.

Machine Shops—

Over two hundred job orders this year. Some parts, for instance 3 bench millers. There are 68 parts to each machine, job numbers running from 329.1 to 329.68 on bench miller alone, which is only one of two hundred.

VOCATIONAL TRAINING IN THE ARMY

Alvin E. Dodd, Secretary, National Society for the Promotion of Industrial Education

THE United States is going to give the army boys a chance to return to civil life prepared for more effective work in the industries.

Early in the Congressional deliberations on the Army Bill, Senator Hoke Smith—who, by the way, is the leader in the Senate for putting thru the Smith-Hughes Vocational Education Bill—introduced an amendment providing that 96 hours per month of a soldier's time be given to vocational training in the agricultural and mechanic arts, preparatory to return to civil life. Civil teachers might be employed to aid the Army officers in conducting this educational work.

The amendment was accepted by the Senate without a dissenting voice, altho later in the Committee discussions, the amount of time for training was reduced to 70 hours.

Of course the thought back of Senator Smith's proposal was that such an arrangement would increase the number of enlistments, and that those who entered the service would be prepared not only for fighting but also for money-earning tasks in civil life when they returned to it.

This would make it possible for many who would otherwise resort to manual labor, to fit themselves for better things, to put both mind and body in training and ultimately to be better citizens.

In doing this, the United States is taking a leaf from Germany's book. German efficiency in mechanical pursuits is, in no small measure, due to such vocational training of young men while serving in the army.

There is one trouble with Senator Hoke Smith's suggestion, however—it did not present a plan, altho it stimulated a number of people to make suggestions. The suggestions on putting this training into effect began to appear almost immediately after Congress was asked to consider Senator Smith's amendment. All of these plans contained elements of value and at least two were transmitted to the War College for study and report. Broadly speaking, the various plans contemplated two things: (1) Efficiency as a soldier in military duties, and (2) the attainment of such efficiency under conditions that also prepare the soldier for his return to the civil, industrial life. This is giving a two-fold efficiency to the country—a military efficiency and an economical efficiency. Men would return to civil life not only better but also more useful members of society, and considerable economic waste in the standing army would be avoided.

Major General Leonard Wood in approving of the idea in general said: "If we add to the purely military and civic features of army training a system whereby the soldier is enabled to acquire a vocation—a trade or a profession—we have added that much to the industrial efficiency of our Society and have made the army a source of economic gain of great value. The army and the military establishment would be as efficient a social instrument in times of peace as it would be of protection in international emergencies. This is a good idea if it can be put into operation without unduly extending the period of military service. The idea is worth most serious study and consideration."

The question of vocational training in the Army was discussed at one of the Board meetings of the National Society for the Promotion of Industrial Education and shortly after this meeting, representatives of the National Society conferred with Secretary of War, Baker. A few days later, Secretary Baker sent to the Conference Committee in charge of the Army Bill at that time, a substitute for Senator Hoke Smith's amendment, as follows:

"In addition to military training, soldiers while in the active service shall hereafter be given the opportunity to study and receive instruction upon educational lines of such character as to increase their military efficiency and enable them to return to civil life better equipped for industrial, commercial and general business occupations. Civilian teachers may be employed to aid the Army officers in giving such instruction and part of this instruction may consist of vocational education either in agriculture, or the mechanic arts. The Secretary of War with the approval of the President shall prescribe rules and regulations for conducting the instruction therein provided for, and the Secretary of War shall have the power at all times to suspend, increase, or decrease the amount of such instruction offered as may in his judgment be consistent with the requirements of military instruction and service of the soldiers."

The Conference Committee adopted this amend-

ment and it was included in the Army Bill when it finally passed on May 19, 1916.

It remains now to follow out Major General Wood's suggestion, that a far-sighted plan be devised that is at once sound, practical and effective.

In order to formulate such a plan based on the best thought, experience and judgment on such matters, it is necessary that a full knowledge of the facts bearing on the question be obtained. To this end it has been suggested that a Federal commission be appointed:

(a) To make a complete survey of present opportunities and proposed schemes for vocational training in the army.

(b) To report thereon with recommendations for a definite policy of procedure and administration.

Organization and Work of a Commission on Vocational Training in the Army.

I. *Representation:* A Commission should be appointed consisting of seven men representing the following interests and points of view:

1. Constructive and progressive employer who is thoroly familiar with the needs and requirements of industry and commerce.
2. Representative of organized skilled labor.
3. Progressive school administrator constructively inclined toward vocational education.
4. Three representatives of the Army.
5. Representative of agricultural interests.

II. *The Proposed Survey should include:*

1. Studies of vocational work now being done in the Army and opportunities for its extension.
2. Hearings and conferences with experts and citizens in each field affecting the object of the Commission's inquiry.

III. *Time:* The work of the Commission should be completed within six months and the results submitted in a report immediately thereafter (to the President and Secretary of War).

IV. *Expenses:*

1. The members of the Commission should be paid their actual traveling expenses and subsistence while engaged in the work of the Commission.
2. The Commission should have authority to employ among others, a secretary. The entire expenses of the Commission should not exceed a certain sum.

V. *Scope of the Investigation:* The Commission might consider the following questions among others:

1. To what extent can army posts be used as schools?
2. To what extent can existing trade schools be used?
3. Are other educational institutions to any extent available?
4. To what extent can old soldiers' homes, now rapidly becoming vacant, be utilized?
5. Shall vocational training follow a period of intensive military training, or shall the two courses of work be given during parallel periods?
6. How may hours per day, and what length of period, will be necessary for pursuit of courses in the various subjects?
7. What equipment and materials are needed for each?
8. What number of civilian instructors will be needed; how are they to be secured, and what salaries shall be authorized?

VI. *Subjects for Instruction:* These should be determined after careful study of:

1. Army needs.
2. Demands of industry and commerce.
3. Inclinations and capacities of men desiring training.

Possible fields of training:

Machine trades in various forms.
Building trades, including plumbing and steamfitting.
Electrical trades.
Gardening.
Cooking.
Harness repair.
Automobile operation and repair.
Stenography and typewriting.
Bookkeeping and other commercial branches.
Telegraphy and telephony.

VII. *Products of Training: Their Use.*

1. Shall disposal of products made in the course of training be confined only to the Army?
2. Where vocational training is conducted on a sound basis, it is reasonable to expect a productive output.
3. The products of the vocational training might be used very largely in meeting the necessary requirements of the army itself in almost every line.
4. The training itself could well fit the men in the army for the work connected with building, operation, and upkeep of Government property.

VIII. *Results which might be expected:*

1. *Men* who join the army will become more efficient as soldiers and as citizens by
   (a) Promoting habits of industry.
   (b) A training the value of which the men recognize.
   (c) A training the need for which is recognized by thoughtful army officers.
   (d) Relating army training to the economic needs of civilian life.
   (e) Giving valuable training to boys and men

who live in regions unprovided for school facilities and who are lacking in opportunities for education (mountain regions and the South).

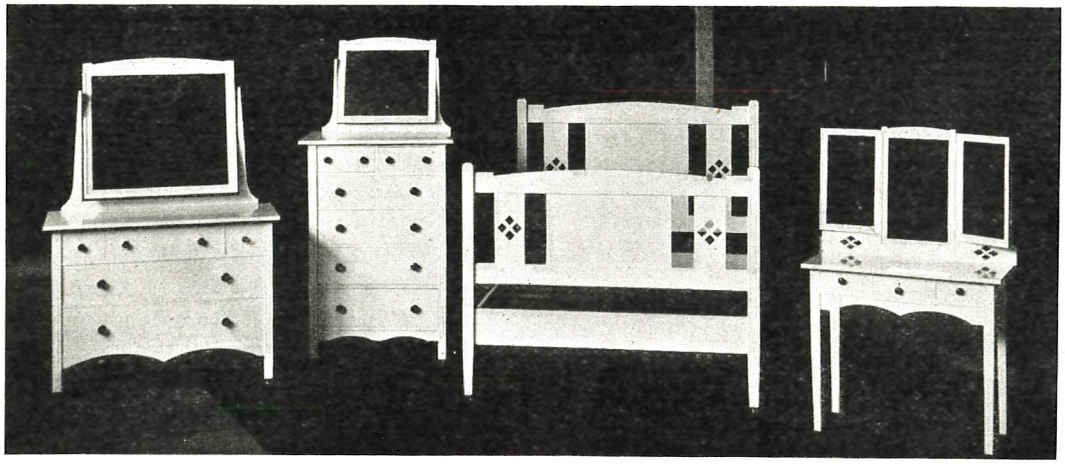
(f) Giving valuable training to boys and men who have been forced out of school by economic necessity or lack of appreciation of the necessity for training, and who now wish to add something to their present elementary knowledge.

(g) Give training to boys and men who have been engaged in mechanical and agricultural occupations and feel the need of more training that they may equip themselves for promotion and a higher type of work.

(h) Relieving the burdens placed upon communities by men who leave the army unfitted for useful employment and the means for a livelihood.

2. A class of men entering the Army who will be able to assimilate their military training in a much shorter time than at present, and who will make more intelligent soldiers.
3. A favorable reaction on industry by
   (a) Making it more efficient in time of peace.
   (b) Making it both efficient and effective in times of war.
4. A favorable reaction on education in general by
   (a) Indicating how it may be made more practical and better adapted to the industrial needs of our country.
5. Unemployment and mis-employment will be reduced by giving enlisted men a more definite prospect of profitable employment on their return to civil life.
6. A larger appreciation of the Army on the part of the public.

Men who serve the Nation should be the Nation's pride. We do not want to think of soldiers or sailors as mere "food for cannon." We prefer to regard them still as American citizens with the hopes and ambitions common to our people. The Government should give something more than food, clothes, wages and military training to enlisted men.



A Suite of Enameled Bedroom Furniture. Designed and made by a student in the classes of Mr. Ralph F. Kinter, Braddock, Pa.

PLASTER MOLDS FOR CONCRETE POTTERY

Herman Hjorth, University of Porto Rico, Rio Piedras, P. R.

THE study of concrete has, in the last few years, been included in the industrial arts curricula in a good many schools with ample justification, for the variety of work suitable to different communities and environments which can be done with concrete can hardly be surpassed, or even equalled, by any other material used in industrial arts instruction.

Among the multitude of projects which can be made of concrete, pottery seems to have received considerable attention. Most of the pottery made in schools has generally been of the square and rectangular type of flower pots cast in wooden molds; the circular forms cast in plaster molds, such as

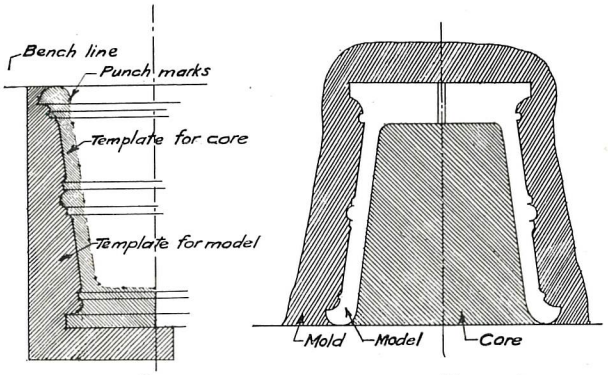


FIG. 1

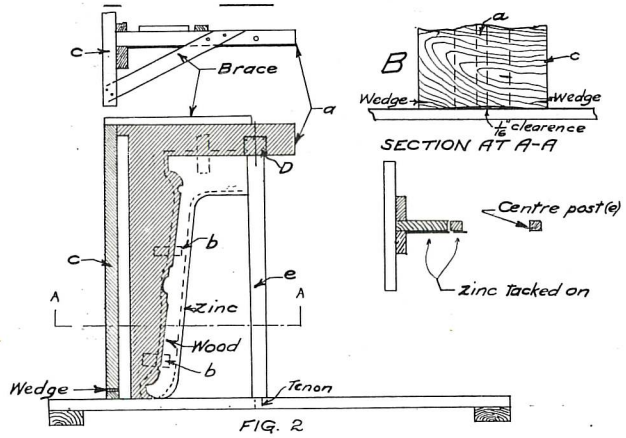


FIG. 2

vases, bird baths, fountains, columns for sun dials, gazing globes, etc., seem to have received less attention. The construction of circular forms is not difficult and does not require much more skill, if any, than the making of the square forms whereas the possibilities thru this work are far greater, and the results are more pleasing and artistic.

The making of concrete pots is not a thing apart without relation to any other school subject. On the contrary it offers splendid opportunities for correlation with other studies. The work may be related to fine arts in the study of design, to mechanical drawing in the making of a working drawing, to

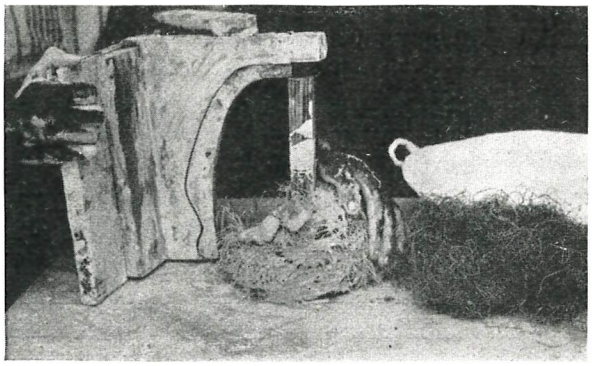


Fig. 3.

metal and woodworking in the construction of templates, to clay modeling in the shaping of ornamental work, and also to such industries as the concrete industry and the pottery industry. Related work in arithmetic and history of art will readily suggest themselves.

Another argument in favor of concrete work in general and concrete pottery in particular, is the cheapness of the small equipment necessary, especially the elimination of an expensive kiln with its constant cost of operation, the low cost of materials, and the ease with which they are obtained.

Concrete vessels like these are cast in plaster of Paris molds. These molds must first be made. The terms model and mold must not be confounded. The model is the exact representation of the vase as it will appear when cast in concrete. The mold is the form in which the base is cast, and it is made from the model. (See Fig. 1B.)

Drawings for vases cast in plaster molds should always be made full size, as the template used to "sweep up" the plaster is cut directly from the drawing. The simplest kind of vase is one which can be made with two templates, one for the core and one for the outside form or model as, for example, the vase shown in Fig. 1. A vase of this kind is made bottom side up, consequently the top line of the vase will be directly on the bench while the plaster model is being made. This line is called the benchline.

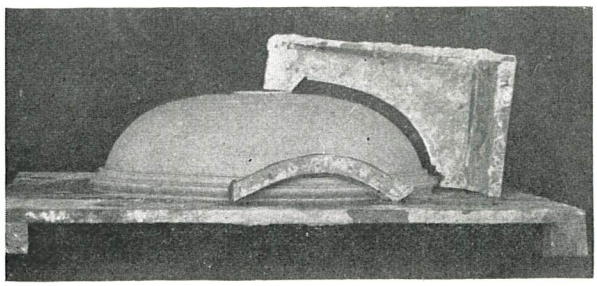


Fig. 4.

The drawing is placed over a piece of sheet zinc. Holes are punched thru paper and zinc at the places indicated by the dots (Fig. 1), the inner line forming the core and the outer the model. While punching the holes the paper may be held in place by some weights placed on it. The holes may be made with an ordinary steel punch or a large nail filed to a sharp point.

The templates are now cut out as indicated with tinners' snips—(it is better to have one pair with straight blades and one pair with curved blades) and the edges trued up with a file. The templates are placed on a $\frac{7}{8}''$ pine board (a, Fig. 2), the outline of the vase marked with a sharp pencil and cut out with a turning saw or a band saw, $\frac{1}{4}''$ behind the line marked. The board is cut $\frac{1}{4}''$ behind the line, so as to give that much clearance when sweeping

Fig. 5.

up the plaster, hence too great pains need not be taken with this work. Only this must be remembered: The wood must not come in contact with the plaster at any point, but on the other hand too much zinc must not be allowed to project. It must be supported by the wood to give it stiffness and prevent it from bending as the vase, otherwise, would lose its true shape. The sawing of this curved line should be done with one continuous cut, so the wood for the core-template may fit snugly to the other template (Fig. 3), and be fastened to it with cleats b, shown in Fig. 2. The wood should not be undercut at the benchline or at the center, but should come flush with the edge of the zinc at those points. The center point should be carefully marked and a $\frac{1}{8}''$ hole bored as indicated. A piece of zinc D, with a corresponding hole should be bent over the wood to prevent it from wearing out when

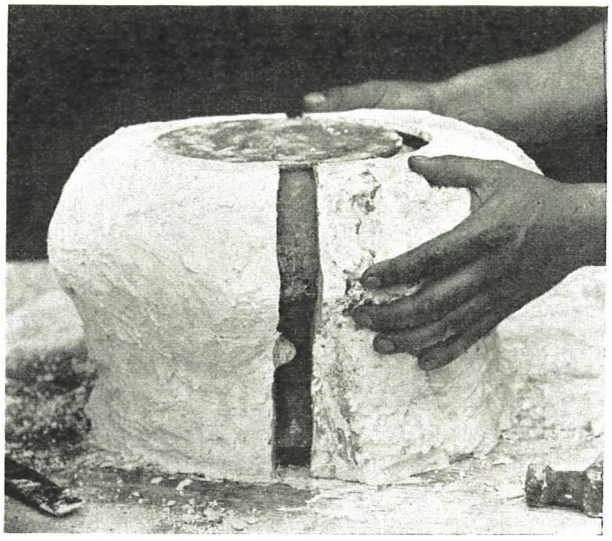


Fig. 6.

the template is revolving. The zinc is now nailed on to the wood, allowing it to project $\frac{1}{4}''$ as explained. This board a, with the zinc nailed on, is then fastened at right angles to another $\frac{7}{8}''$ board c, and securely braced to prevent any side play, thus forming the complete template for the outside shape or model of the vase. In order to insure the template touching the bench evenly at all points while being revolved, two saw cuts are made $\frac{3}{4}''$ from the benchline and two small wedges driven into these, thus giving about 1-16″ clearance at the benchline, Fig. 2B. Or instead of driving in the wedges, the edge of the template may also be planed slightly concave. The template for the core is now fastened inside the other template and to it with cleats as explained above. A stick of wood E for the center about 1″ square is cut $\frac{1}{2}''$ longer than the inside perpendicular height of the vase, and on one end a $\frac{3}{4}''$ tenon half an inch long is made to fit a mortise cut in the platform so as to prevent the stick from turning while the template is being revolved and the plaster model made.

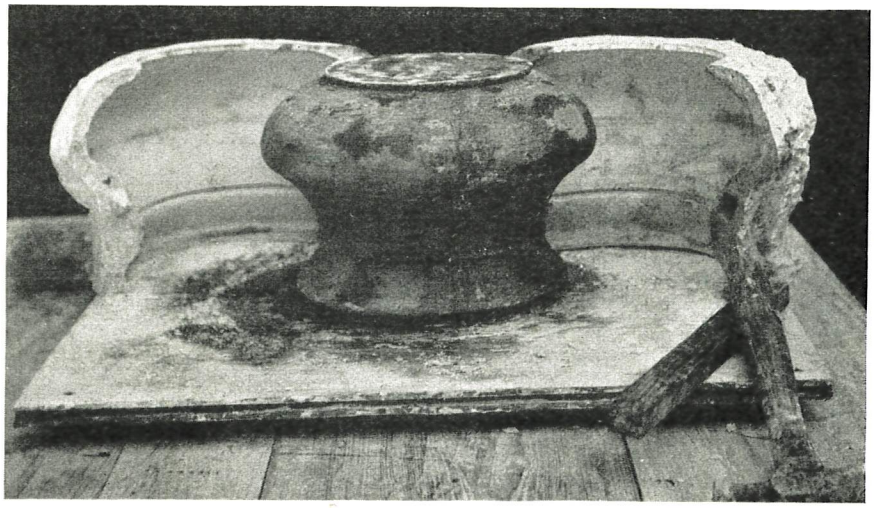


Fig. 7.

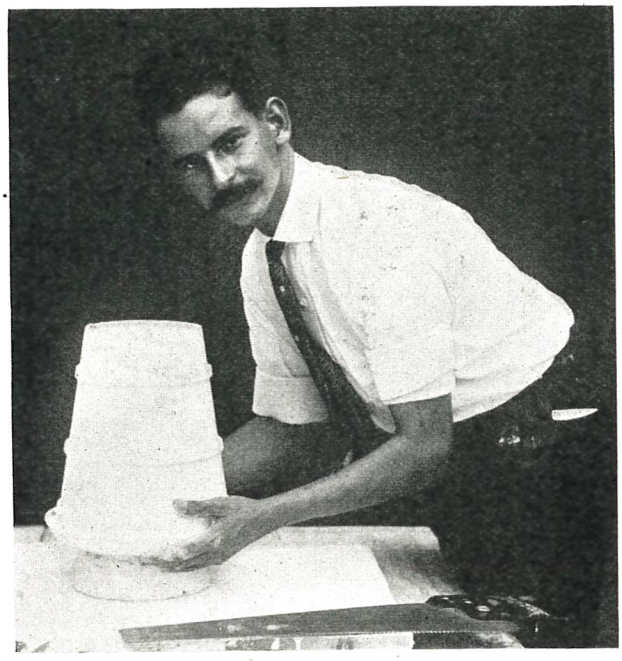


Fig. 8.

A long, thin nail is then pushed thru the hole bored in the template, and driven a short distance into the square stick in the center and everything is ready to begin the plaster work.

The plaster is best mixed in an ordinary enameled wash-basin. Clean water is first poured into the basin until it is about half full, and after that the plaster is put in. Experienced plasterers generally scoop up the plaster from the barrel with both hands and sift it evenly thru the fingers into the water. Eleven cups of plaster to seven cups of water will be about the right proportion, but with a little experience it will be unnecessary to take the time to measure the quantities. The plaster should be allowed to soak a couple of minutes in the water so as to allow the air to escape. It is then stirred thoroly. A handful of excelsior is then dipped in the plaster and wrapped around the stick in the center. The template should be revolved continually to prevent getting too much plaster in one spot. Lumps of plaster left over from other work need not be thrown away, but may be packed around the stick when beginning a new vase, thereby saving material. (See Fig. 3.) When, in this manner, the stick has been wrapped in excelsior dipped in plaster until only about $\frac{1}{2}''$ space is left all around to the edge of the template, it should be finished with pure plaster. When the template begins to cut the plaster, it should be removed frequently by pulling out the nail on top and the surplus plaster cleaned off with an old knife. Likewise the plaster should be cleaned from the platform and a little grease rubbed on it in order to make the template revolve easier and prevent the plaster from sticking to the wood. The last coating of plaster should be thinner, and a little water poured over the form will help to make it more smooth. The basin should be cleaned well after each mixture of plaster is used up, and no bits of old plaster should be allowed to remain in it.

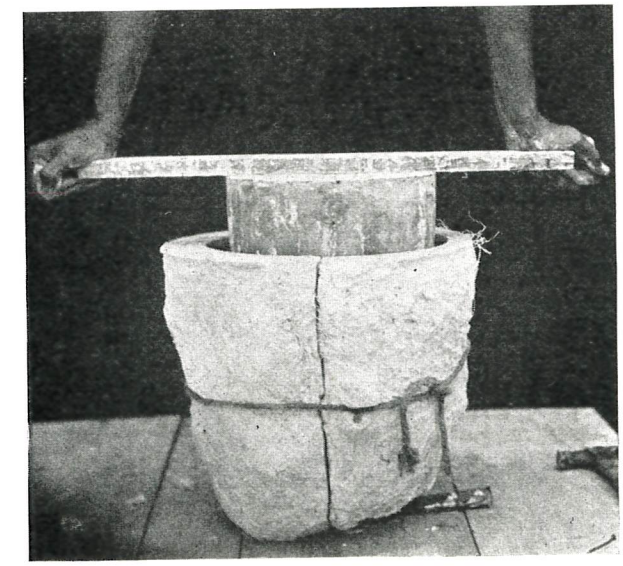


Fig. 9.

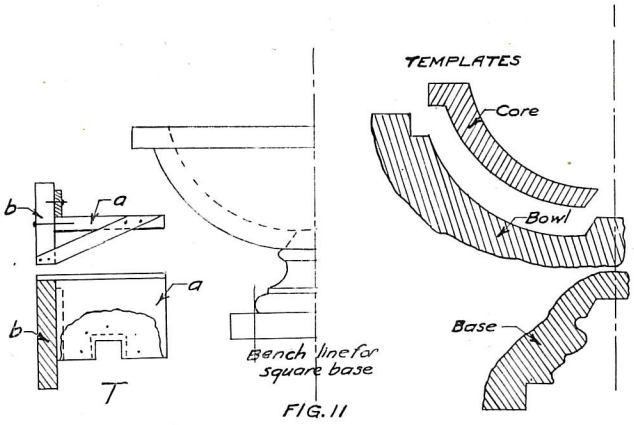


FIG. 11

After the core has been completed, it is allowed to dry for about fifteen minutes. It is then given two coats of shellac (orange), and when this is dry, it is rubbed with grease thinned with kerosene. This is done to prevent the plaster for the outside form or model (which is built up on the core) from sticking to it. Resin dissolved in denatured alcohol can be used instead of shellac and is less expensive. The template for the core which is fastened with cleats to the template for the model, is now removed and the plaster forming the model is built up in the same manner as was the core. Thin layers of excelsior dipped in plaster are first applied to the finished core, then pure plaster, and for finishing a little water. (See Fig. 4.) Having finished the model, the mold is then made from it in the following manner.

First shellac and grease the model in the same manner as the core was treated. Draw a diameter with a pencil on its bottom, which is now turned up

Fig. 10.

Fig. 12.

since the model was made upside down. Continue this line perpendicularly down each side of the model, dividing it into two halves of equal size, being careful not to get one half larger than the other. Take some wet clay and roll it out in a long roll about $\frac{3}{4}''$ in diameter, flatten it and apply it on one side of the line as shown in Fig. 5. Plaster is then put on that half of the model to which no clay was applied. The process of applying the plaster is now reversed. The fine, thin plaster is applied first, making the inside smooth, and excelsior dipped in plaster is put on afterward, until the mold has a thickness of from $1\frac{1}{2}''$ to $2\frac{1}{2}''$. When applying the thin plaster to the model, care must be taken to break all the air bubbles so as to insure a perfect contact and a smooth surface.

The clay is now removed and the edge squared and smoothed with a chisel if necessary. One small hole is cut in each edge of the mold in which a key or a kind of tenon is formed when the other half of the model is made (Figs. 6 and 7). This is done to make the two halves fit perfectly together. The edges are then shellaced and greased, after which the other half of the mold is made. It is better to leave the molds over night or at least a couple of hours before trying to separate them, as they otherwise might be too soft. Before separating them the platform should be tapped with a hammer. This will loosen the molds from the platform. An old thin knife, or saw blade, is also useful to push in between the molds and the platform. When somewhat loosened a chisel, or a cold chisel, is then carefully driven into the joint, first on one side and then on the other, and one-half generally comes off very easily, and can be pulled out with the hands. (See Fig. 6.) A stick of wood is then held against the edges of the remaining half of the mold and tapped very lightly with a hammer first on one side and then on the other, until the mold is loose. (Fig. 7.) It will now be understood that if the model had not been divided exactly in the center, it would have been impossible to separate the larger half of the mold from the model without breaking it.

It now remains to take out the core, which is inside the model. The latter is loosened from the platform in the same manner as the mold and simply lifted up as shown in Fig. 8. In case of difficulty in loosening the model, it may be carefully broken

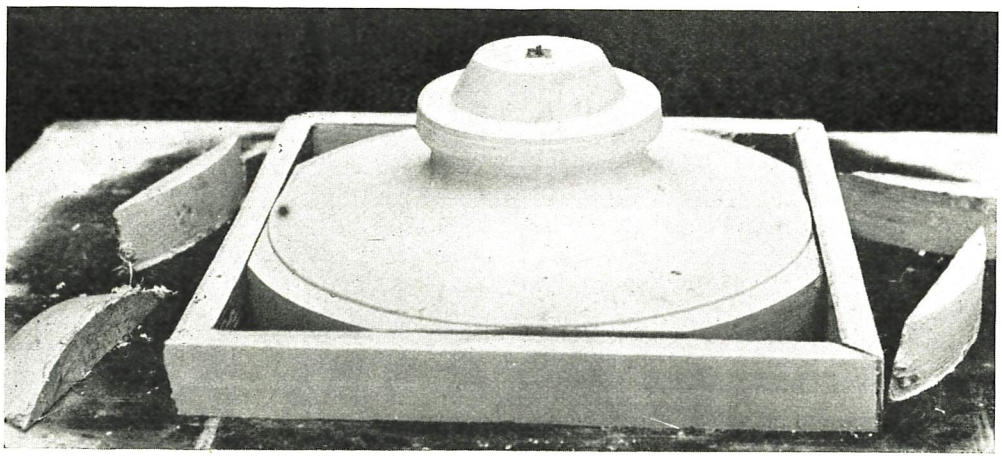


Fig. 13.

to pieces as it is of no further use. After removing the core from the platform, the tenon of the center post is first sawed off. The core is then turned right side up and a board nailed to it. (See Fig. 9.) Nails can be driven into plaster reinforced with excelsior with the same ease as in soft wood. The molds are then treated with shellac and grease and the core is also given a second treatment.

When casting the vase, the molds are tied securely together and partly filled with concrete, care being taken not to leave any air bubbles so that when the core is pushed in, the molds will be filled full of concrete. When pushing in the core, it is turned slightly from one side to the other and finally placed exactly in the center. (Fig. 9.) Some weights are put on it to keep it in place. It is left that way for about two hours, when it is carefully removed and the concrete covered with a wet cloth. The concrete should be allowed to dry not less than 48 hours. At the end of this time the molds are removed as previously explained. The molds and the core should be shellaced and greased each time a new casting is made.

When a vase is wider at the bottom than at the top (Fig. 7), it will be understood that the core cannot be made as described above, because it would be impossible to remove it after the vase was cast. Sometimes a core for this kind of vase is made of plaster, but it is then built up of several pieces, which can be removed one after the other; more commonly however, it is made of sand or clay. Clay is the easiest material to work with for beginners and is therefore to be recommended. A separate template must be made for the core and the clay is swept in the same manner as was the plaster. Nails may be driven into the upright on which the template revolves, or little pieces of wood may be nailed to it so as to better hold the clay in place. When completed, the molds, which have been made open at the base (Figs. 6 and 7), are placed around the clay core equally distant on all sides and securely bound together, after which the cement is poured between the clay core and the molds, thus casting the vase bottom side up. When dry the molds are removed as explained above, and the clay taken out in handfuls. Every time a casting is constructed a new clay core must be made.

The vase mentioned so far can be made in molds consisting only of two pieces and are, therefore, called "two-piece mold vases." The vase illustrated in Fig. 10, on the other hand, would require a four-piece mold, two for the bowl and two for the base.

The model of the mold is made with two templates, one for the core and one for the model as explained above. (Fig. 3.) The model of the base is made in the same manner, but with only one template, as no core is necessary. The diagram (Fig. 11) will make the cutting of the templates clearer. The model of the bowl is made upside down, but the model of the base is made right side up.

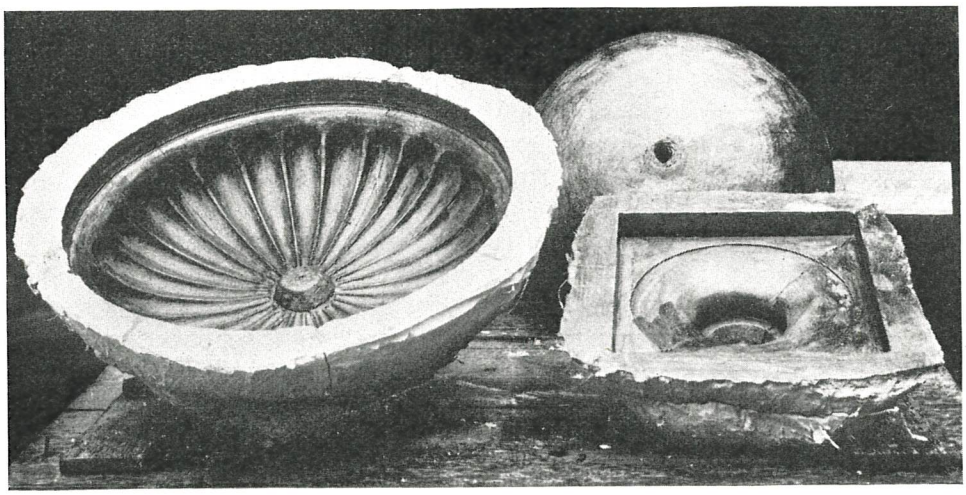


Fig. 14.

The square part of the bowl and the base is now made. A template (illustrated in Fig. 11T) is constructed, so that the back B projects about one inch below the piece A. This template is not revolved, but is moved along the edge of the table or bench from one end to another (Fig. 12), the back butting against the edge of the table at all times. The plaster is mixed as usual and run out on the bench along the edge, and the template is moved away from the operator until a long, rectangular strip of plaster is formed. No excelsior or other reinforcement should be used. The part of the model to be squared is marked off with two steel squares and the superfluous pieces sawed off, after which the long strip of plaster is cut to lengths, mitered at the corners and placed in position. (Fig. 13.) The open places in the corners are filled with plaster and excelsior and the whole smoothed off well. After shellacing and greasing the model, the two molds are made and parted diagonally from corner to corner,

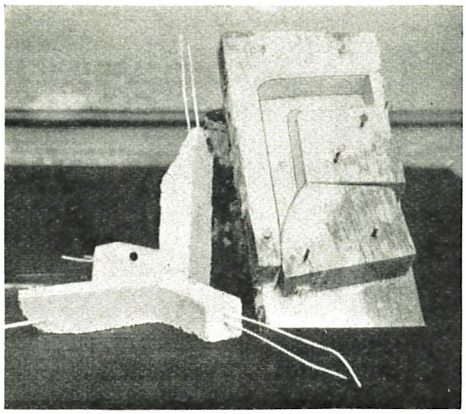


Fig. 15.

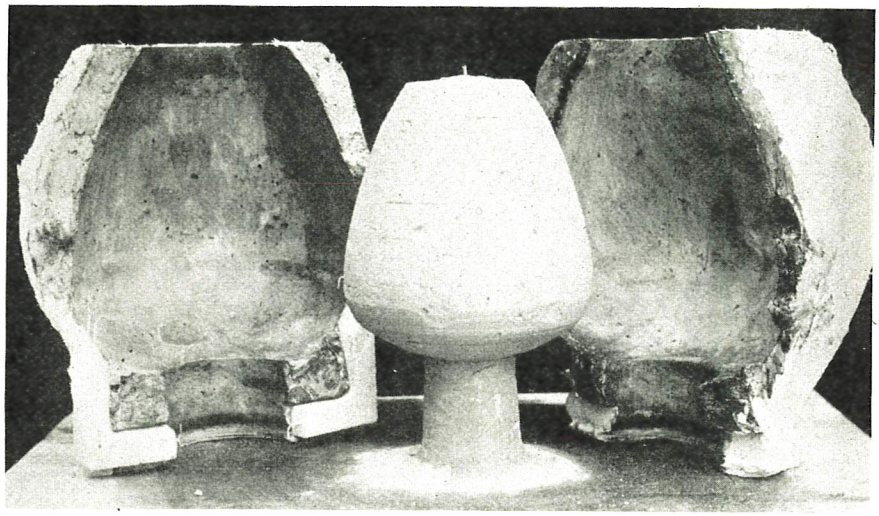


Fig. 16.

but the hole in the model must first be filled with plaster. This plug is pulled out later and placed in the bottom of the molds so that it will form the hole in the casting of the bowl, which fits over the projection on the base. (Fig. 14.)

When casting a vase which is low and wide as the one just described, some other means must be employed to hold the molds together, as they cannot be tied as illustrated in Fig. 9. This can easily be done in the following manner: Before removing the molds from the model, they are given a little grease and are covered about half way down with plaster reinforced with excelsior, thus forming a cap covering the two halves. When sufficiently dry this cap is taken off and the molds removed from the model in the usual way. They will fit perfectly when placed in the cap right side up. (Fig. 14.)

Figures 15 and 16 illustrate the construction of vases with handles. The first step in the construction is to cut out of wood handles of the exact size and shape, and nail them to the model in the place they should occupy, so that when the molds are made they will receive the impression of the handles. A wooden mold, similar to the one shown in Fig. 15, is made and the handles cast in concrete. It will be seen from the photograph that the handles are reinforced with wire, which is bent in such a way that the wires will be firmly inbedded in the concrete when the vase is cast. Figure 16 shows how they are placed in the molds in the depression made by the wooden handles of the model. The core for this vase is made of clay as explained above and the vase cast upside down. The vase can be lifted by the handles without fear of breakage.

The model and molds for a vase having four feet are illustrated in Fig. 17. The feet are cut out of wood and nailed to the model as shown. The space between them is filled with plaster in such a way that it can be removed like a stopper after the vase is cast The photograph shows plainly how the molds are made and parted. If the feet are given just a little "draft" the models will come apart very easily. If it is desired to embellish a vase with feet in the shape of balls, they may be made separately, and attached to the vase with wire in the same way as handles.

Students with some knowledge of clay modeling may enrich their vases in various ways. Fig. 21 shows a vase with a very simple decoration, which does not require much skill to make. The method of procedure is as follows: After the model has been made in the usual way, it is divided into the required number of spaces, in this case 25. One of the decorations is then modeled in clay, shellaced and greased. When sufficiently dry an impression or mold is taken from it, and in this mold each of the 25 pieces is cast. The mold is made of plaster reinforced with excelsior, and the process is the same

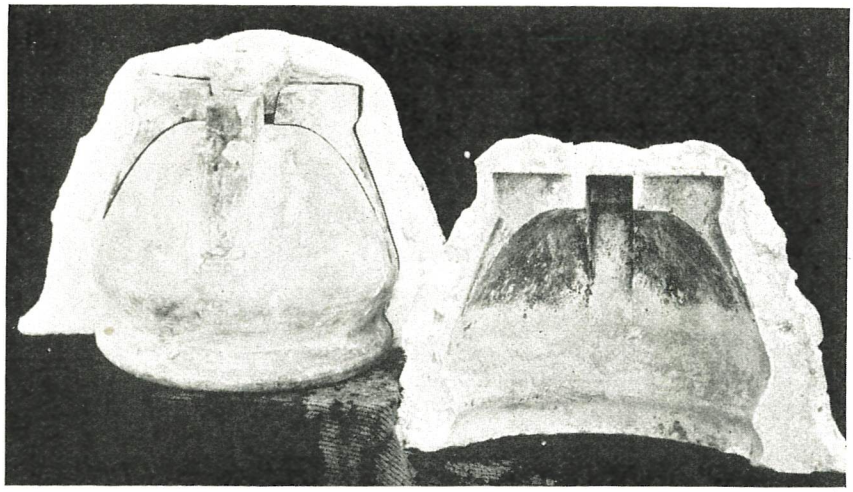


Fig. 17.

Fig. 18.

as that employed for making other molds. (Fig. 18.) Before commencing the casting the mold is well shellaced and greased. The greasing must be repeated after each casting, while the shellacing process is usually not repeated. A piece of burlap is embedded in the plaster for reinforcement and the plaster smoothed off evenly with the edges of the mold, so that the coating will conform to the shape of the model. A little piece of plaster is placed at the heavy end of the casting so that it may be grasped with the hand when dry, while the mold is tapped lightly with the handle of the trowel to release the casting. The piece of plaster is cut away with a knife or chisel, and the casting is smoothed with sandpaper. Care should be taken to get the edges perfectly straight. When all the pieces have been cast, they are fastened to the model in the following manner: First, give the model and the flat side of the pieces two coats of shellac; pour a little shellac in a discarded tin can (a can which has been used for filler or wax will answer the purpose) and light a match to it. This will cause the alcohol in the shellac to burn away, making the shellac thicker. When sufficiently thick the fire is put out by placing a piece of wood over the can. Two or three daubs of this thickened shellac are put on the shellaced side of each piece, which is placed in position on the model. When all the pieces have been "stuck on" in this manner, the whole model is given an extra coat of shellac and greased. The molds for the bowl of this vase are made in five parts. (Fig. 14.) Whenever vases are enriched with modeled ornaments, it will be found necessary to make the molds in more than two parts. The above method gives very satisfactory results when the ornaments are not undercut, in which case it will be found necessary to use gelatine molds. As undercut ornaments, however, are rarely used on concrete vases, a discussion of the gelatine process does not come within the scope of this paper.

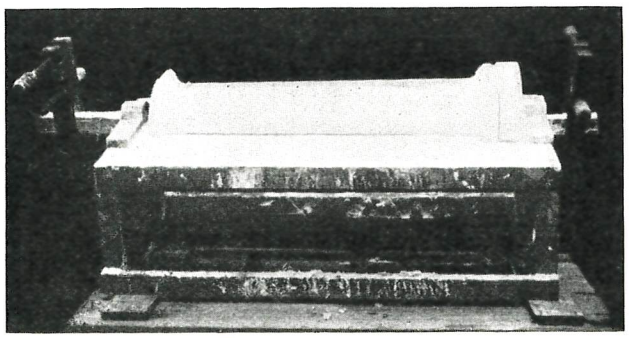


Fig. 19.

Columns for gazing globes, sun dials, etc., are made somewhat similar to the one described for vases. Instead of revolving the templates, the model is revolved and the template remains stationary. Figure 19 shows the model of a column just finished, with the template for the core removed. The core for a column is built up on a stick of wood about 2″ by 2″, which is turned at the proper places to fit into two bearings made out of wood, while the remainder of the piece is left square. Soap or graphite applied to the bearings will make the stick turn easier. A handscrew is fastened to each end, so that the stick can be revolved while the plaster is being applied. A few nails driven into the stick help to make the plaster and excelsior adhere better.

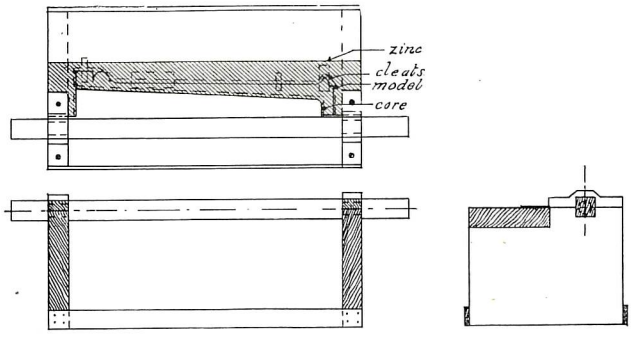


Fig 20

The construction of the templates is indicated in the drawing. (Fig. 20.) When the core is finished it is shellaced and greased. The template for the core is removed and plaster applied until the model is finished, as shown in the photograph. The base may now be squared as explained above (Fig. 13), the completed model shellaced and greased, and the molds made in two parts in the same manner as described above. Some of the illustrations show vases inlaid with tiles. Tiles are manufactured in various sizes and different materials, ranging in price from 30 cents a square foot for the ordinary kind, to $2.50 for the gilded ones. They may be inlaid in vases in one of two ways. If the first method is used, the model must be made in such a way that a groove, a little larger than the tiles to be inlaid, is formed. For example, if it is desired to inlay tiles in the square part of the vase (Fig. 10), the template with which the long strip is made (Fig. 12) is cut so that it will make a groove of the desired depth and width in the strip of plaster it is designed to make. When the vase is cast this groove is then

CONCRETE VASES MADE BY EIGHTH AND NINTH GRADE BOYS IN RIO PIEDRAS PUBLIC SCHOOL.

made wet, a little mortar put into it, and the tiles set evenly. The second method consists of gluing the tiles to the sides of the molds in the proper place. As tiles always are sold glued to a heavy brown paper, the gluing does not present any difficulties. When the concrete is poured the moisture dissolves the glue and paper, and the tiles will afterward be found firmly imbedded in the concrete and flush with the surface. However, if it is desired to have the tiles raised a little above the surface of the concrete, the first method must be used.

After a concrete vase has been cast, it must be "pointed up" or made smooth like other castings. If ordinary cement and sand are used, the mixture is brushed over with muriatic acid which is allowed to remain a couple of minutes before it is washed off. The acid breaks the crystallization, so that a thin paste of cement and water thoroly rubbed into the vase with the hand, will make a better bond. The vase is left to dry in a shady and preferably damp place until the next day, when it is rubbed smooth with a carborundum stone and a little water. The vase is again left to dry until the following day, when it is smoothed with a piece of fairly coarse sandpaper. The white vases are made of equal parts of white cement and marble dust. The mixture should be fairly thin, so that it will run easily. To prevent air bubbles, shake the mold a little. The white vases are treated in the same way as the gray ones only sulphuric acid is used instead of the muriatic acid, and white cement instead of gray. When carefully finished, these vases will have a very smooth, white surface closely resembling marble.

Note.—For different mixtures and finishes of concrete see "Concrete Surfaces" published by Universal Portland Cement Co., Chicago, Ill.

Fig. 21.

Vocational Guidance a Part of Regular School Work

Leonard Righter, New York City

VOCATIONAL Guidance has generally meant finding out about a person's abilities and tendencies in order that he may be *told* what place is most suitable for him to fit into. Tests have been devised that set people off into groups; observations are carried on that men may be classified; and in days past clairvoyants and phrenologists have directed men to certain lines of occupations without they themselves having any mental reactions in regard to the proposition at all. All such methods are based on outside authority, the individual following what is laid out for him.

This paper endeavors to outline a plan based on an opposite conception—that of the growth and development of the individual himself into a realization of his place and function in the social life of which he is a part.

It is taken for granted that there is a great need that people should have such a conception. There is plenty of work in the world, yet there are idle men; men shift from place to place; they do not make good in the work they have undertaken; and there is discontent and envy — all of which shows lack of efficiency and lack of adjustment.

Because the need of such adjustment is a great social demand, because it is the right of all to have an opportunity to find his place, because each must realize that the strongest must bear the greatest responsibility, and because the material concerned in such a development has high educational value, it is our contention that the school curriculum should contain this work of Vocational Guidance.

Vocational Guidance, then, is a part of education and it means placing before an individual such situations that he, thru his own efforts, will change and come to a realization of his rightful place.

To wait until a person is ready to begin work or until he is shifting from one place to another is like prescribing medicine for a sick man—the time to begin is long before he gets sick; an ounce of prevention is worth a pound of cure. It is not too soon to begin giving his background of vocational intelligence when the pupil first begins to go to school.

Kindergartners are using every avenue to bring little children into touch with social life and nature. They have games and plays about occupations, they visit places where work is being carried on, and they use pictures in connection with talks about the work of the world.[1]

A good many projects for grade 1 may be centered in the work that father or mother does. For example, one teacher and her pupils find out what is necessary to change wheat into bread. Wheat, still unthreshed, is brought into the classroom, the children have a part in getting the kernels out of the head, they see what it means to get the kernels ground into flour, and what is required to get the flour baked into bread.

A second grade worked out on a sand table a village street, putting in shops and stores. In so doing the pupils found it necessary to go to every one of the real places to find out what was done there.

A third grade grouped much profitable work about the meat packing industry. The pupils went to market to find out about meats, they searched books and papers and asked questions to find out where cattle were raised, how taken care of, and what was done with them in the packing houses.

A fourth grade worked with cotton. They found out about the work of those who produce it, what is necessary to make it ready for manufacture, what it means to twist the threads, and finally how the threads were put together to make cloth.

A fifth grade worked out a means of making paper and in so doing obtained an idea of the woodcutters' (or ragpickers) work and were introduced to another phase of our great industrial life in mills.

A sixth grade while working on the making of a book found out what it means to bind books, to get material ready for printing, and the work of printing and illustrating.

These illustrations are given not as a complete outline for each grade to undertake, but as suggestive of the way in which each grade may take up some phase of our social and industrial life so that the work of the world may become a real thing to the children.

The work of the elementary school (grades 1–6) is concerned with the broader conceptions of social and industrial life and those that are common to all—men and women alike. It furnishes a body of situations that directs attention to the workers of the world. It is a period that, from the industrial point of view, is concerned with *industrial acquaintanceship*. It should result in the pupils' gaining at least three general ideas; first, that men do work from which each one profits; second, that men work together; and third, what the types of work are like that satisfy the six great fundamental needs of man, viz., food, clothing, shelter, records, utensils, tools and machines.

It is hoped that material of this kind will have an influence in keeping boys and girls in school longer. Because of its relation to real life and the work of

1 See Kindergarten Review 1912-1913, p. 316.
See Kindergarten Review 1913-1914, frontispiece.

men it will appeal not only to children as interesting but to parents as eminently worth while. While it is hoped that its guiding power will be toward further schooling, yet if pupils must leave school they will at least have a general basis on which to make a choice of a vocation.

Beginning with the seventh school year (age about 13) boys' work and girls' work begins to differentiate. The girl must be provided for in two ways. She is to be the *Homemaker* of the race and as such will receive direct instruction to that end in such courses as sewing, cooking, and care of the home. From this point of view her occupation in life is fixed beforehand. But in addition most girls have a period between leaving school and the home-making period when it is necessary for them to be self-supporting.

Boys are to be the *Homeproviders* and as such their occupations will cover a wide range. For them and for the girls who are to be self-supporting this period before sixteen is a period that must provide vocational insight. The method is the same for both boys and girls.

The guiding principle is that of furnishing information and practice in as many of the occupations as the facilities of the school and the community will permit. This does not mean that the work will be limited to the occupation of that community alone, for the Iowa study of eight hundred boys showed that forty per cent were not working in the same city where they had gone to school, and Ayres stated that only one father out of six is working in the locality where he was born. So far as known nothing has been determined about the distances that these persons are from their native towns. A survey is much needed that will show as closely as possible what per cent of workers live within an area of a given distance from their native town.

Ayres showed that over three-fourths (76.22 per cent) of the workers in seventy-eight cities could be classed in fourteen groups. They are:

Retail trade—13.27 per cent.
Iron and steel products—12.9 per cent.
Building trades—10.64 per cent.
Textiles—6.16 per cent.
Road, street and bridge transportation — 5.7 per cent.
Transportation by railroad—5.63 per cent.
Domestic and personal service—4.67 per cent.
Wholesale trade—3.76 per cent.
Professional service—2.97 per cent.
Public defence—2.45 per cent.
Lumber and its manufacture—2.17 per cent.
Public administration—2.17 per cent.
Food and kindred products—1.91 per cent.
Clothing—1.82 per cent.

Such a grouping helps to indicate in what lines there seem to be the greatest demand. But this grouping does not give any direction about all those occupations concerned with extractive occupations such as farming, mining, or forestry. The various groups of occupations made by the United States Census Bureau together with the detailed lists under each head, help to give perspective and show where the emphasis may be placed. This perspective may be still further increased by a survey of occupations for the region with a fifty-mile radius.

Remembering that we would give information and practice in as many occupations as possible, what is to be the method of approach? If the work in the first six grades has been carried out along lines as suggested above the pupils already have interests aroused and many will have projects they wish to carry out. Such pupils may be given sheets of directions and at once started on their work. New pupils, or others with no project ahead, must be surrounded with a body of suggestive material. Such material will consist of sketches, drawings, blueprints, and descriptions of articles that boys and girls are interested in making and doing, and which are not beyond their capacity to handle. These suggestions will include a range covering the five great classes of occupations listed by the Census Bureau, viz., Industries of Extraction, Transportation, and Commerce, Trade, and Service. There will be opportunities for garden and farm work, the clerical work of the school will offer projects, the supplies, the printing, the need for new school furniture, the school repairs, the needs of the school dramatizations, the lunch rooms, special days and seasons, community needs such as investigations, maps, clothing and toys—all suggest some forms of projects. To these may be added the suggestions of such magazines as "Popular Mechanics" and such books as "Boy's Book of Electricity" or the "American Girls' Handybook." Having chosen a project with the suggestive help of the instructor the pupil should be handed a sheet containing directions relative to that project and its relation to the school and to society.

Such a sheet will have approximately the following heads:

1. Value of such a project.—With questions and suggestions leading the pupil to see values and relations farther than at first thought.

2. The attack.—Questions and suggestions about planning. Sketches and drawings. Sources of materials (shop).

3. Construction.—Leading questions helping the pupil to see the best way of developing the work in hand.

4. Occupational relations.—The emphasis may be put on the occupation most evident in working out the project. The people who work along this line,—wages, health, chances for advancement, etc.

5. Correlations.—The arithmetic connected with the project, composition selections, spelling words involved, suggestions of literature. What men in other times have done. Science principles involved. Helpful reading.

The following is a sample of how such a sheet may be worked out in detail, using "The Installation of a Door Bell (electric)" as the subject of the project. The pupil may be led to choose this because after looking at the suggestive material it may occur to him that he would like to do it for his own home.

Installing an Electric Door Bell.

1. *Value.*—You already feel that it will be a good thing to have a bell on your door at home. Can you think of other places about home where it will be handy to have such a bell? Look about when you are around town and find as many places as you can where bells are used to call the attention of people. Are they all electric?

2. *Attack.*—(a) Make out a list of the different things you think you will need and then make a diagram to show how you think they will go together. Let the instructor go over this with you.

(b) Make a neat drawing such as a draftsman would make showing the layout of the work as you would have it done.

(c) The materials you need will be found in Box A, Cupboard 4. In the southeast corner of the room is a model doorframe on which you may adjust your material. The necessary tools are in Cabinet 2.

3. *Construction.*—(a) What is your reason for placing push button where you do? The bell? The cells? Which should be done first, the placing of the parts or the cutting of the wire? Why?

(b) What is your plan for getting the wire thru the doorframe and out to the push button? How will you place the wire so it will be most hidden? Why not drive the staples down close and tight?

4. *Occupation.*—"Electric Wiring."

This is one of the simplest jobs the "Electric Wireman" has to do. What are some of the other kinds of wiring he may do about houses? In factories? Out of doors? In what ways do you think his work is dangerous? Would you consider his work healthy? Why? How many hours per day and week does he work? Are the hours regular? Does he have work the year around? What chance is there to get ahead? What positions can a wire man work up to? How much pay does he receive? Is it increased when he becomes more experienced?

5. *Correlations.*—(a) Find out from a catalog the length of wire on a spool. What part of all did you use? What was the cost of the whole spool? The part you used? Get the total cost of all the material you used. Make out a bill for the same and receipt it. Estimate your labor at ten cents per hour. Make out an itemized bill to the school for wiring one door bell. What should each of the items be listed at if the proprietor is to make twenty per cent on what he furnishes? If a wireman receives $15 per week and pays one-third for rent, one-tenth for coal, two-fifths for provisions, and one-fifteenth for clothing, how much can he save? Can he afford to have any pleasures?

(b) Look out for the spelling of such words as cell, battery, current, circuit, staples, annunciator.

(c) Look in the books of science to find out what makes the bell ring when the button is pushed.

(d) What did the people do when there were no electric bells? What are "door knockers?"

(e) What could be done for a person in case of a severe electric shock?

(f) Write an account of how you did your work and what you have learned about the work of an electric wireman.

Such a plan will entail a great deal of work on the instructor at the beginning, in getting out the necessary direction sheets but if a number of each kind are made, these will be available when a new group of pupils comes in. At the beginning it may be best to get out some sheets beforehand. The experience of the instructor will tell him that certain kinds of projects are almost sure to be chosen.

The classroom teacher and the shop teacher must be in close and sympathetic touch, and the teacher of English can assist still further in the matter of Vocational Guidance by bringing more general questions to the attention of the pupils thru the composition work that is done. Such topics as the following might be assigned: "Experiences in earning money," "The kind of man (or woman) I would like to be," or "What I will do when I grow up."

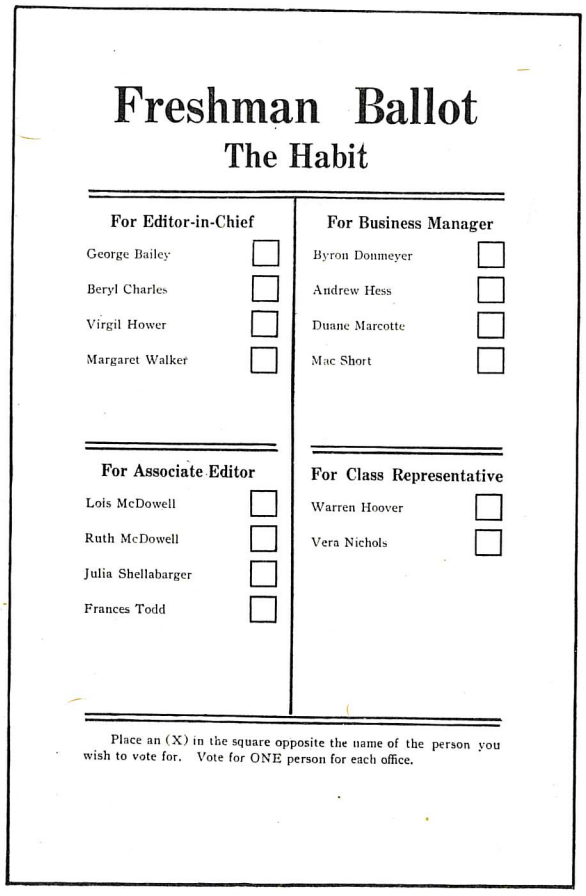
It is hoped, therefore, that thru the general industrial intelligence gained as a background in the elementary grades and the working out of projects with their attendant problems, accompanied by suggestions relative to the occupation most stressed, the boys and girls will come thru their own development to realize their abilities to fill a definite place in the world of workers.

If you accept Art it must be a part of your daily lives. You will have it with you in your sorrow as in your joy. It shall be shared by gentle and simple, learned and unlearned, and be as a language all can understand.—*William Morris.*

A STUDENT ACTIVITY

Karl H. Miller, Salina, Kan.

THE Habit, published and printed in the Salina, Kansas, high school, is truly a student publication. Soon after school takes up in the fall, students are seen circulating papers endeavoring to secure a representative list of signers for their candidates for the different positions in connection with the school paper. The electioneering is spirited. Nomination papers with the required number of signatures must be filed in the principal's office before a pupil's name can appear on the official ballot. Passing grades are required of each candidate the same as



Freshman Ballot

The Habit

For Editor-in-Chief		For Business Manager	
George Bailey	☐	Byron Donmeyer	☐
Beryl Charles	☐	Andrew Hess	☐
Virgil Hower	☐	Duane Marcotte	☐
Margaret Walker	☐	Mac Short	☐

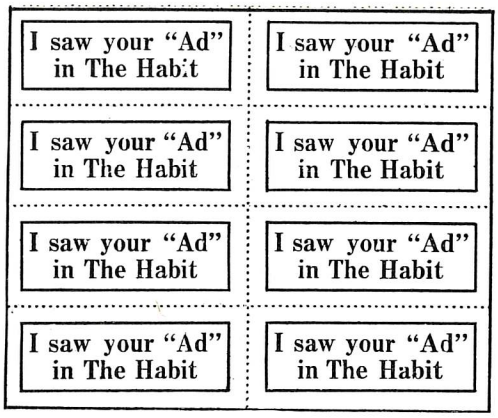
For Associate Editor		For Class Representative	
Lois McDowell	☐	Warren Hoover	☐
Ruth McDowell	☐	Vera Nichols	☐
Julia Shellabarger	☐		
Frances Todd	☐		

Place an (X) in the square opposite the name of the person you wish to vote for. Vote for ONE person for each office.

Exhibit 1.

are expected of participants in all other student activities. Election day is called, booths are erected and election judges named. The ballots (exhibit 1) are printed in the High School Print Shop. The polls are open from eight o'clock in the morning until four-thirty o'clock in the afternoon. All electioneering must be done outside of the building on election day.

The officers elected by the school (all pupils enrolled in the high school are eligible as voters) are the editor-in-chief, associate editor, business manager, and the four class representatives. The successful candidates meet after the general election to select the remaining twenty members of the staff. This selection is in the hands of the pupils and their judgment has been very good. Who knows the accomplishments of the students better than the fellow student? If an officer shirks his or her duty a resignation is accepted but this is seldom necessary.

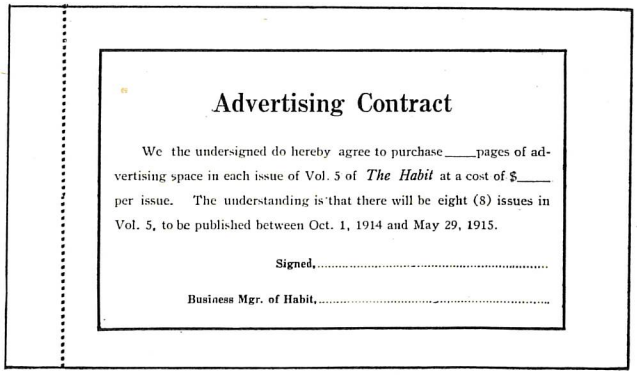


I saw your "Ad" in The Habit	I saw your "Ad" in The Habit
I saw your "Ad" in The Habit	I saw your "Ad" in The Habit
I saw your "Ad" in The Habit	I saw your "Ad" in The Habit
I saw your "Ad" in The Habit	I saw your "Ad" in The Habit

Exhibit 2.

The editor has a regular school period each day for Habit work and the business manager spends one period each day working on The Habit accounts. One credit toward graduation is offered each of these pupils.

All staff meetings are called and handled by the editor. Seldom is a teacher present at these meetings. The two faculty advisers are always invited but are not in evidence. More freedom of expression and better results are secured if the pupils make and carry out their own plans. All copy is turned



Advertising Contract

We the undersigned do hereby agree to purchase ____ pages of advertising space in each issue of Vol. 5 of *The Habit* at a cost of $____ per issue. The understanding is that there will be eight (8) issues in Vol. 5, to be published between Oct. 1, 1914 and May 29, 1915.

Signed, ...

Business Mgr. of Habit, ...

Exhibit 3.

in to the editor before it is placed in the hands of the student printers. Members of the printing classes set the type, run the press, assemble, staple and trim the book each month.

Class contests are held to increase the subscription list. The grammar school is given a page or

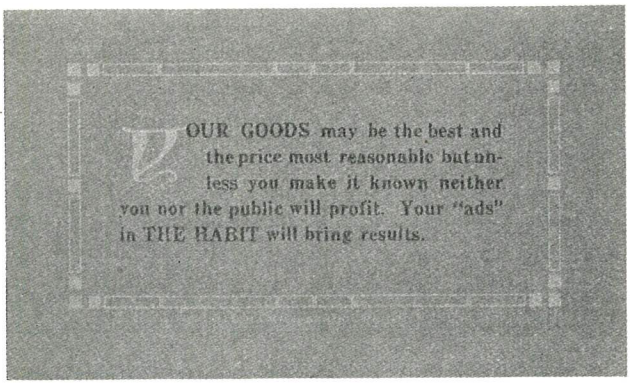


Exhibit 4.

two each issue. This adds to the subscription list, trains people for the staff and interests the grammar school pupils in the high school.

All illustrations and cartoons are made from original drawings. These drawings are made by high school students.

Exhibit 5.

A perforated sheet (exhibit 2) of "I saw your ad in The Habit" is inclosed in the first issue each fall. The slips are easy to carry and are given out when the pupils shop. Advertisements are read, the students become familiar with the firms that support the paper and the businessmen feel that their ads are bringing results.

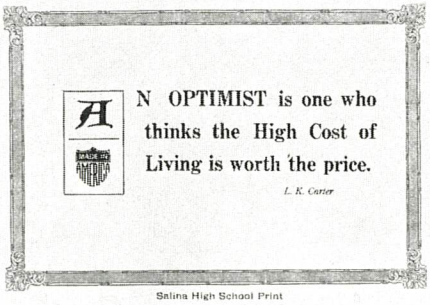


Exhibit 6.

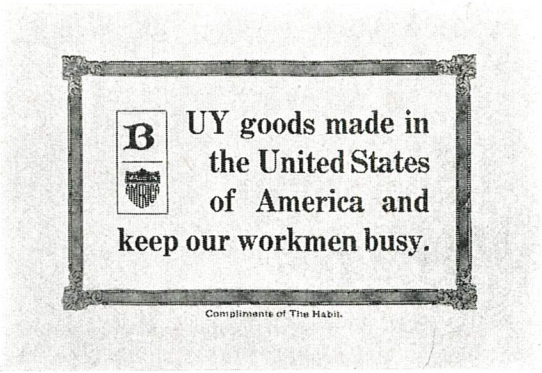


Exhibit 7.

Exhibit 3 is the advertising contract used by the business manager and his assistants. The contract helps to hold the advertiser who might become discouraged.

Exhibit 4 is one of the numerous cards used when soliciting advertisements.

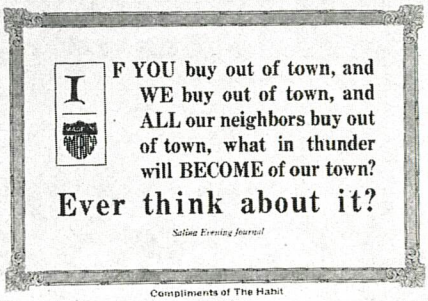


Exhibit 8.

Last fall the dry goods stores decided to close at seven o'clock Saturday evenings. At the suggestion of the business manager, the print shop turned out exhibit 5. The cards were given to the different store managers. Needless to say that they were well received. Exhibits 6, 7, 8, 9 are samples of cards and mottoes that were given to the merchants,

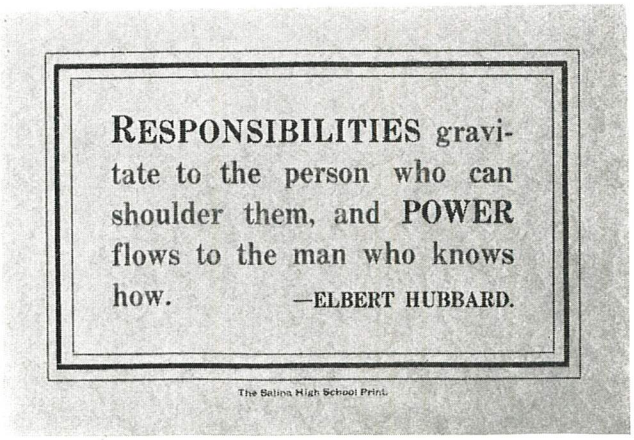


Exhibit 9.

either when collecting copy or money for advertising. The merchants were glad to see the business manager. They do not try to dodge the solicitors.

The Habit is decidedly a student activity in every sense of the word. The paper is the product of student enterprise. The more privileges allowed the students, the more responsibilities they accept and the better the production.

Development of Water Color in Primary Grades

Martin F. Gleason, Joliet, Ill.

(Second Article)

Equipment.

Color box	Small piece of cloth
Brush	Piece of table oil cloth
Water pan	Paper

IN primary grades most good is derived by working with the three primary colors—red, yellow and blue. Semi-moist cakes are to be preferred rather than the dry cakes, as they remain softer and more workable giving off color quite freely. They also give a better depth of color with less work on the part of the child. At this time of the school life of the child, we should avoid giving him materials which demand too much thought and attention on his part, as he is unable to handle too many points at one time.

When selecting a box it is advisable to choose one made up of half-pans. Two half-pans of any one color are better than a full pan of the same color because children may be taught to use one of the pans when pure color is needed and the other when a mixture is to be used. In this way we avoid much dirty, muddy color. Some commercial firms offer boxes containing eight half-pans or four full pans. This set of colors usually consists of the three primary colors and black. For most purposes black is unnecessary and sometimes dangerous in the hands of teachers who are unfamiliar with the theory of color and may well be omitted in the lower grades. Yellow is used more than anything else, so the box should contain more of that color. A very serviceable set of colors may be made up of three half-pans of yellow, three half-pans of blue and two half-pans of red. If gray or black is considered necessary, one pan of blue may be omitted and one of gray or black substituted. When the pans of any color are emptied they may be replaced without buying a complete box. Most retail dealers who handle colors will supply them in single pans when desired.

For general purposes a No. 7 brush is perhaps the most desirable. This size will do nearly everything which young children should be expected to do. A handle large in diameter is a distinct advantage in the hands of young children. It is easier for little hands to grasp and hold this kind and it will be helpful in developing control.

A great variety of water pans is offered by school supply houses. One of the most serviceable has a granite finish which prevents rust. Pans which do not stack are to be avoided as they are very hard to care for when not in use. If each child buys his own pan it makes little difference whether those brought in stack or not as in all probability they will be kept in the children's desks. Many times, when it is impossible to secure regular water pans, small dishes and bottles may be brought from home by the children. Empty paste bottles, cold cream jars, etc., may be used. Sometimes in five and ten-cent stores, little glass dishes three for five cents may be procured. Of course, there is danger of breaking these dishes and they are somewhat harder to take care of than regular water pans.

A paint cloth is an absolute necessity and each child should be provided with one. These may be brought from home by the children or may be furnished as other supplies are. Cheese cloth, or muslin, serves the purpose very well.

It is possible for the water used in this work to do much damage to the desk, especially where the wet paper method is used. The varnish is affected by the moisture. This is apt to cause some complaint on the part of school authorities. This possible damage may be minimized thru the use of table oil cloth laid on the desks while the children are using color. The cost of this is very slight and the saving of school property is considerable. A piece of oil-cloth 12″ by 18″ will serve most purposes however; if possible, it should be large enough to cover most of the desk to be used.

The market is flooded with very good inexpensive papers adaptable to water color painting. Always choose an unglazed paper with one side having a rough texture. Common manila paper such as is sold for drawing purposes will answer very well for this work. Avoid those papers which are very thin and flimsy as they do not have body enough to stand the water used. White paper affects the color much less than manila paper and is better to use in advanced classes when making a technical study of pigments. Our aim in primary grades is far from this and we should use the paper which gives us most effective results.

One will be amply recompensed for any time spent in carefully considering and choosing equipment. No good work can be done without good tools and materials. Most supply houses are only

too glad to send samples for inspection and much worry and strain may be avoided by inspecting before adoption, instead of after.

Care of Equipment.

There is no point in all our school work where order and system are more desirable and essential than in caring for the equipment used in water color work. Careful planning on the part of the teacher with regard to this matter will make one's work more effective and increase the pleasure in teaching the subject. The planning is practically all that the teacher need do as the actual work may be, and should be, left to the children. It is worth while at the beginning of the year, to explain carefully to the children just how materials are to be passed, collected and cared for when not in use. Keeping to this system will do much for the work in general. The excitement which accompanies disorder preceding a lesson is apt to produce restlessness and inattention, which continues thru the lesson, preventing results of value.

Each child may be expected to care for his own equipment especially if he buys all articles used for himself, or if school articles are assigned to him for his use thruout the year. If the equipment is kept in the desk, much confusion and noise may be avoided if it is placed as far back in the desk as possible. When this is done the children are not so apt to pull the different articles out and drop them on the floor when taking books from the desks. Some teachers prefer to collect the paint boxes after each lesson, especially in the first grade. If this is done each box should be plainly labeled. Stickers such as are used in drug stores are very good for this purpose. Monitors may collect them and when collected heavy rubber bands may be slipped over those belonging to each row. This makes collection and distribution somewhat easier.

From the first children should be taught that a clean color box is a necessity. They should be required to clean the colors at the close of each lesson. If in mixing, color foreign to any cake remains on it, it should be washed off as carefully as possible. If this is not done each time it will soon be found that the cakes will not yield clear color. A few minutes taken to inspect the boxes will be time well spent. The children may hold up the boxes so that all may be seen at once or a few minutes may be spent in marching, each child carrying his paint box and passing before the teacher for inspection.

When paints are new and fresh they yield very readily to the brush as it is passed over the surface of the cakes, but after they have been exposed to the air several times they become somewhat hardened and then it is more difficult to get enough color in the brush as easily as is desirable. Children should be shown how to moisten the paints and make them easier to work with at the beginning of the lesson. The brush should be well filled with water, held in a vertical position above the color to be moistened, and the water squeezed out with the fingers. This process should be repeated on every color to be used during the lesson. Instead of squeezing out the water with the fingers, the well filled brush may be placed on the side of the pan holding the color and rolled until the water leaves the brush and flows on to the paint.

The brush, a vital factor in producing good results, should have the best of care. No good work can be done with a poor brush, and a good brush soon becomes a poor one unless it receives proper attention. A well cared-for brush should look like Fig. 1, Plate 1. At the close of a lesson it should be thoroly cleaned and shaped by stroking it with the

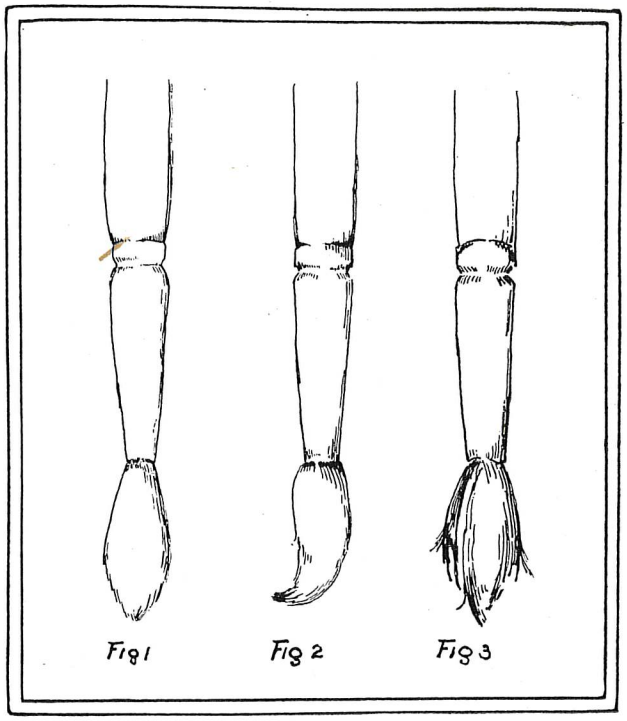


Plate I.
Fig. 1 shows a brush in good condition.
Fig. 2 shows the result of cramping the brush.
Fig. 3 shows a brush that has been abused.

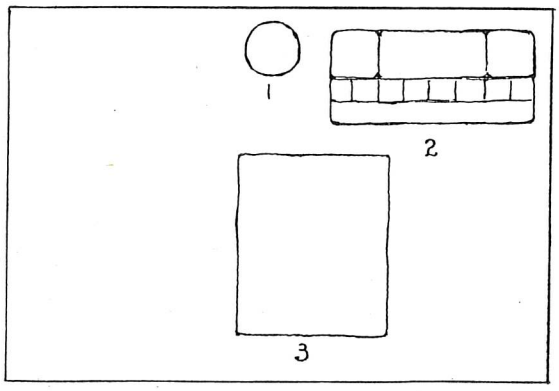
fingers or paint cloth, and placed in the box so that the point of the hairs will not be pressed against the end of the box. Fig. 2, Plate 1, illustrates what happens to the brush when this is done. Children seem to find much amusement in abusing brushes and one of the favorite amusements is pressing the hairs down on the desk, separating them from the center so as to form a wheel shape. This is very bad and results in something similar to Fig. 3, Plate 1. One can readily see how detrimental this is and how it might affect results. A clean and well shaped brush is an urgent necessity and this is retained only thru proper care. Inculcate in the little people as early, and as deeply as possible, this idea and you will be increasing the efficiency of your class considerably.

The passing and collecting of water pans is perhaps the biggest burden attached to the care of equipment and much confusion and disorder arises, unless there is system in the way in which these things are done. Many teachers arrange to have the painting lesson just before or after an intermission so that either the passing or collecting may be done during that intermission. This saves much valuable time for actual painting. One systematic first grade teacher arranges to have the pans ready for use before school begins and leaves them on a table at the back of the room until ready to use them. Then just before the painting lesson a few minutes are taken for physical exercise. At the close of the exercise the children march around the room and as they pass the table each one takes up a pan and passes back to his seat. The children spill scarcely any water as they march because the pans are only about one-third filled. This is sufficient water for working purposes. Another teacher who has her lesson following a recess period, directs her children to go to the table where the filled pans are and take them to their desks as they pass. Still another teacher has provided herself with trays—one for each row of seats—from the five and ten-cent stores. The water pans are placed on these and passed out by monitors, taking only a minute or two. There are many other good ways of getting the pans to children. Any way which is quick and orderly is a good way.

Some vessel with a spout should be provided for filling pans. Ten cents will buy a small tea-pot and will save much irritation caused by spilled water.

If the paint cloth is not too large it may be folded neatly and placed in the paint box under the brush. If too large for this it may be folded and placed in the desk.

The oil cloths, to be used on the desks, should be left flat when not in use. When folded, creases are formed. These remain in the cloth and prevent the paper from lying perfectly flat after it has been wet. These creases, too, cause the preparation used on the cloth to crack and its period of usefulness is cut short. If the water pan is placed at the middle of the front of the desk as shown in diagram, Plate II, much spilling of the water may be avoided. When placed here it is not in reach of the arm of the child in front who turns around to see his neighbor's work. The paint box may be placed as shown in the same diagram. The cover of the box is turned away from the worker in order to prevent any temptation to mix colors in the depressions put in the cover for that purpose. When the time comes for that kind of work the box may be turned around so that these depressions are within easy reach.



1—Water Pan. 2—Paint Box. 3—Paper.

It may seem that much time and space has been taken up telling about the mechanical side of water color work. However, it seems very necessary that this part of the work be well taken care of. All teachers know that haphazard preparation for any lesson means that it takes some time to get children into the spirit of the work which they intend setting before them. Much good is done for the actual painting by the careful preparation and distribution of materials to be used. There is no place in all our school work where that old adage "a place for everything and everything in its place" means so much. This painstaking, orderly preparation on the part of the teacher will mean, thru imitation, more orderly habits of work on the part of the children, and good habits of work are greatly to be desired.

Mixing Colors.

There are some excellent teachers of primary grades who believe that children should be left practically to themselves in working out the theory of mixing colors. The advocates of this method contend that the child's educational development calls for this free experimentation on his part. This "finding out" method is apt to be a very slow process and productive of bad habits in application of color. Other teachers feel that mixing should be taught on a somewhat mathematical basis. There is danger of a lack of life in work of this kind and when such is the case children lose interest. In addition to the classes of teachers mentioned, there are those who believe that the children should be led into the processes of mixing colors in a way which will leave definite elementary theories with them and at the same time draw them into a greater love for color and into possibilities of a more intelligent application of it as a means of expression. This method should supply the necessary experiments in a way which will retain the interest of the little people.

There are various phases of art work which will provide ways of carrying into effect the method just previously suggested. Landscape may be used as a basis for the underlying experiments or the children may be launched into work in fruits and vegetables which are to be found in abundance during the autumn months. At this time the exercises suggested are based on the fruits and vegetables and the processes used in development will be explained and illustrated.

Perhaps the easiest method of mixing is directly on the moist paper. The paper may be made moist as suggested in a previous chapter and colors mixed on this surface or one color may be worked into another while the first is still moist.

Children are always delighted when some way of making an object look more realistic is found. This realism may be produced partly thru more realistic color and partly thru modeling effected thru color placing, suggesting light and dark in a very elementary way. Color, more real, and shape, more real, will appease the children's hunger for realism in what they do and will help keep up interest, carrying them a little farther on into the subject. Even in first grade we may do a few things in justifiable ways which will increase the value of the work and its results.

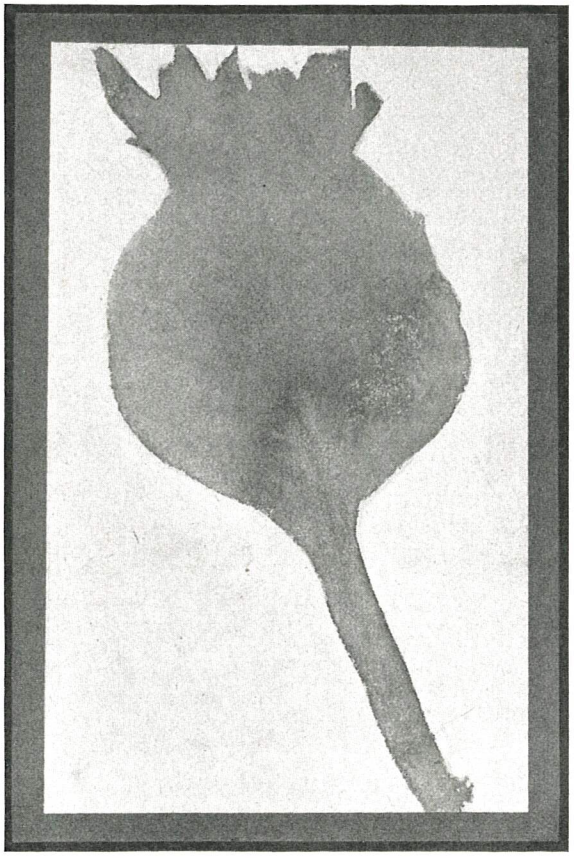


Plate XI.

Dictation and demonstration are as instrumental in development here as in any other line of work. To overdo these phases of teaching processes is, indeed, very bad, but their wise use is very desirable if we see that children are grasping and retaining the different processes thru which we are carrying them.

The exercises previously outlined bring forth flat shapes only, obtained thru the use of one primary color. We may come a little closer to the color of some of our models by going over such flat shapes as these while they are still moist with another color. Plate XI shows a beet done in this way. The beet was first painted in blue and then this shape was gone over with a wash of red. In such a painting as this the blue first used must necessarily be weak as the predominating color in the beet is red. Little can be told of the combinations of colors thru these illustrations because of the process of reproduction. However, it is evident that the colors were put together while that which was first used was very moist, permitting a proper blending.

It is indeed very important that we prevent children from going over and over their color. "Scrubbing" is the word which expresses what they are very much inclined to do. This "scrubbing" process comes very often if we allow too much time for actual painting. Again and again teachers complain about the shortness of the time assigned for drawing periods by some superintendents. In some cases the complaints are justified, but scarcely ever when it comes to water-color painting in the first few grades. Too much time may bring habits that are not conducive to good results in the handling of the medium. Close watching on the part of the teacher and requiring children to stop when it seems that they may work to good effect no longer will help to prevent much scrubbing. A little watchfulness in the first stages will help greatly in making later work light.

The painting of the carrot was made by first painting in a wash of yellow and into this a wash of red. The tomato was painted in the same way. An attempt was made to control the amount of red used in each case, in an effort to produce the orange color of the carrot and the scarlet of the tomato. An additional touch was given to the carrot and tomato by dropping blue into the yellow where green was required.

The process just described will help the production of more accurate coloring but does no more for the shape, unless something is done accidentally, than did the work first suggested. Another step in the process of mixing color on the paper will help in making the painted shape look more like the shape of the model.

Plate XII shows painted fruits and vegetables in which the contrasting light and dark in the color have helped show modeling in a very elementary way. "Dropped" is the word which explains the process by which this darkened color was added after the shape was first painted in what seemed to be the predominating color. In this process the brush has very little to do except to carry the color from the box into the shape in which it is to be dropped. It may be used to a limited extent in guiding the color into the place where it is needed but for the most part the moisture which is on the paper will do most of the carrying. The feathery

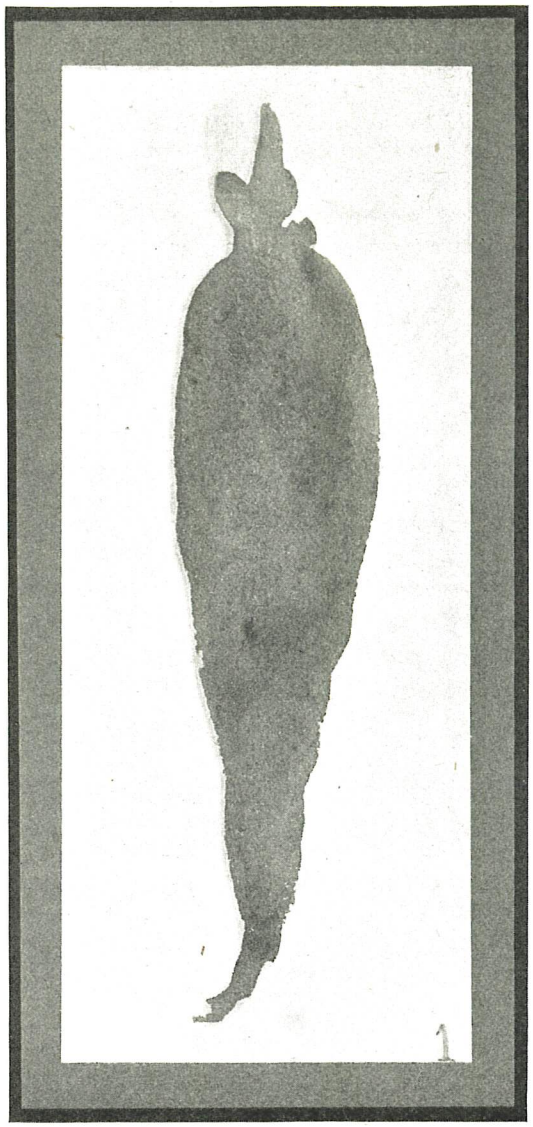


Plate XII. Fig. 1. First attempt at Modeling.

edge along the darker parts of these illustrations shows this flowing of color.

In producing these effects the shapes may be first painted in flat with one color as suggested in a previous chapter, or more accurate color may be obtained by using washes of two colors, one over the other. Into these shapes the darker colors may be dropped. A little directing and demonstrating will help the children to locate this darker color where it will be most effective.

In Fig. 1, Plate XII, the painting of the carrot, the shape was first painted in with yellow, then a wash of red was put into this, and finally blue was put into leaf stems to make them green, and red was dropped into the orange of the carrot shape in the way which the illustration suggests. An attempt was made to have the children see that the part of the model away from the light was the darker. Some saw that this was the case, others could not, but all had some reason in mind for taking this last step. Fig. 2 shows an apple painted in a slightly different way. The shape was first painted in yellow, and red was dropped into the stem, along the top, down the side and across the lower part. In order to produce even more realism blue was dropped into this red. This process not only helped the shape but added much to the charm of the coloring.

The method of mixing colors, suggested in foregoing paragraphs, is by far the easiest way for children to begin. Much definite knowledge relative to color may be derived from these suggested experiments, thru conversational lessons. Encourage the children to talk quite freely of the processes and the results obtained. This will help them to retain whatever facts are desirable. This method should also do much for development of skill in handling the brush and color. The action of the moist surface and color will carry with it the impression of what water-color work should be and when, later on, other methods are used, this knowledge will help fix a standard toward which the children may work.

If the method seems stereotyped and one productive of no development in originality, please remember that it is just a step in the sequence of experiments which will add to the child's power to express himself and surely this must be a benefit to him. It also enriches his experiences in color so that he is able, when the occasion demands, to show more capably, visible evidences of his originality.

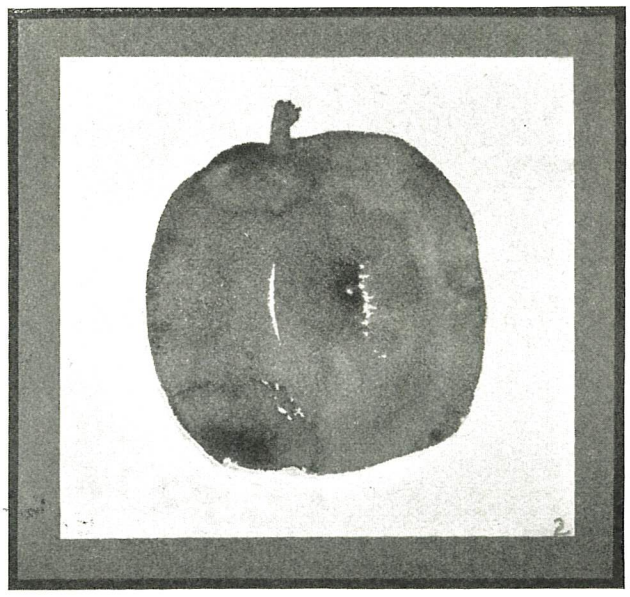


Plate XII. Fig. 2.

A Nut Basket—Directions for Making It

Grace Lee Knell, Supervisor of Art, Ridgewood, N. J.

EVER since records have been kept the art of basket making has been an important craft.

The early Egyptians gathered rushes and wove them into baskets and later made them water-tight by plastering them with mud and baking them in the sun. Was not the great Moses safely moored in one of these cemented baskets in the bathing pool of the Egyptian princess?

From the heart of Africa and the remotest islands of the Pacific come baskets made of the native grasses and fibers, some of these being artistically adorned with bright colored berries and seeds.

If we travel thru Europe we find baskets everywhere, each representing a style peculiar to the needs of the people of the country in which it was made. The ingenious Japanese can hold our attention for many hours showing the artistic baskets his people make; and where will you find more beautiful, intricate and fascinating baskets than those made by

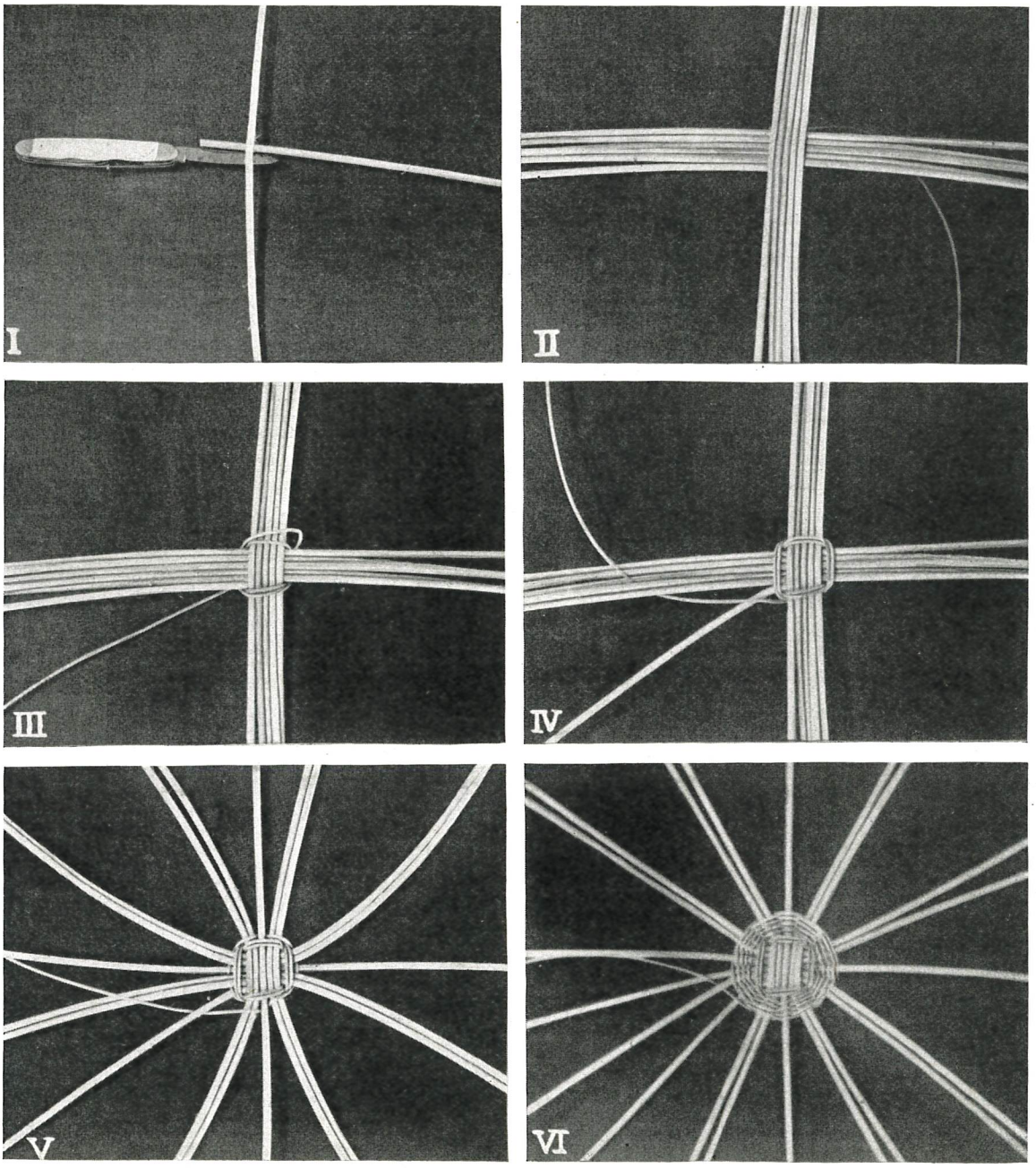


Fig. I—Shows how to split the spokes and insert a spoke. Fig. II—The five spokes passed thru the slits in five spokes, the half spoke inserted in the lower left-hand corner, and the No. 1 weaver inserted in the upper right-hand corner and passing back of the right group of horizontal spokes. Fig. III—Two parallel lines on each group of vertical spokes and the weaver brought diagonally across the back. Fig. IV—Two parallel lines in front of each group and the weaver brought in front of the first spoke in the group of six spokes and under the next two spokes. Fig. V—The spokes properly separated. Fig. VI shows how to separate into single spokes.

the Indians of the Aleutian Islands or those made by the nimble fingers of the dusky maidens of the Southern tribes? Many of these are to be found in the museums of the world, and often we find a wonderful collection in the home of an American lover of the beautiful.

But the popular basket of today is the one made of round reeds, some of which are cut from roots

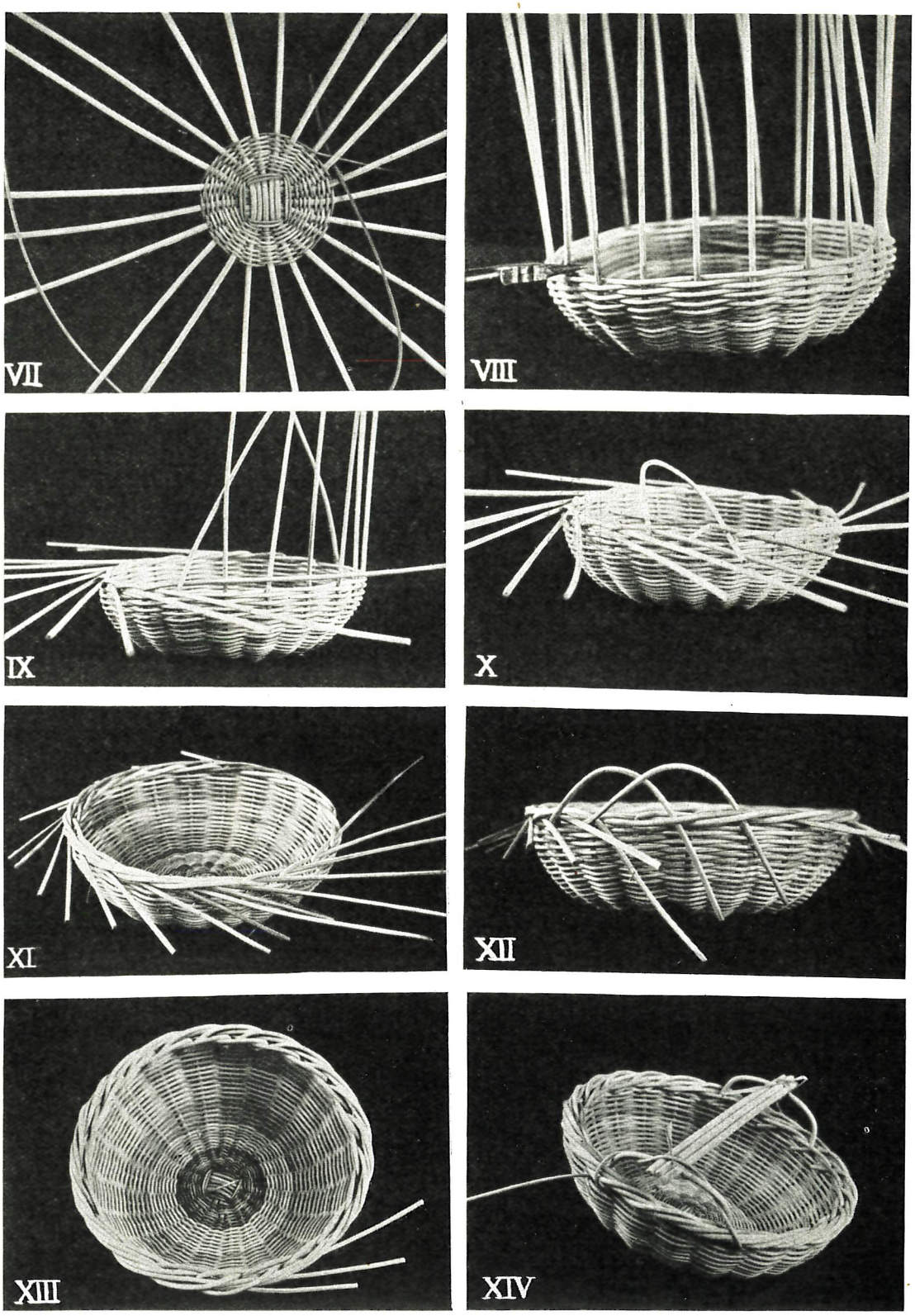


Fig. VII—Shows how to splice the weavers. Fig. VIII—The bowl shape of the basket and how to pinch the spokes before bending them to make the border. Fig. IX—The first operation in making the border. Fig. X—Finishing the first operation of the border. Fig. XI—The second operation of the border. Fig. XII—Finishing the second operation of the border. Fig. XIII—The third operation of the border. Fig. XIV—The making of the handle.

and willows and soft wood. The best reeds, however, are those brought from Germany and Holland, these being longer, smoother, more pliable and free from hairs. These reeds vary in size and are numbered accordingly. Those we are to use are from number one to number seven, the finer ones for weavers and the coarser ones for spokes or ribs of the basket.

Materials required:

Ten spokes of No. 5 reed—32 inches long.
One spoke of No. 5 reed—17 inches long.

For weavers use:

One No. 1 reed
One No. 1½ reed
One No. 2 reed
Two No. 3 reeds
Two No. 4 reeds

For handles use:

Two No. 5 reeds—7¼ inches long.
Three No. 7 reeds—10 inches long.
One No. 3 reed—very long and smooth.

Directions:

Soak all of these reeds in a large pan full of lukewarm water for at least ten minutes. Find the middle of one of the 32-inch spokes, and with the small blade of a penknife cut a slit one inch long, see Figure I. Thru this slit slip five of the 32-inch spokes. Slit the remaining four of the 32-inch spokes and slip on the group of five spokes. Now you have five thru five as in Figure II. These reeds must cross in the center. Now insert the 17-inch spoke. Do not allow the end of this spoke to show beyond the group of five vertical spokes. See Fig. II.

Holding the cross as in Figure II, insert the No. 1 weaver in the upper vertical group on the right side, see Figure II, and bring it back of the right hand group of five horizontal spokes and in front of the lower vertical group, then back of the group of six horizontal spokes, see Figure II, and in front of the group of vertical spokes. Repeat, making two parallel lines on each group of vertical spokes.

Bring the weaver diagonally across the back as in Figure III, then in front of the group of six horizontal spokes and back of the upper group of vertical spokes, then in front of the horizontal group of five and back of the lower vertical group. Repeat, making two parallel lines on each horizontal group.

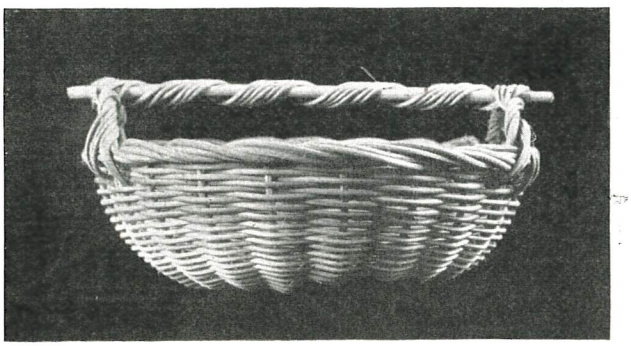


Fig. XV—The Finished Basket.

Now bring the weaver in front of the first spoke in the group of six as in Figure IV, then back of the next two spokes and in front of the next one, then back of the next two and continue to separate the spokes as in Figure IV. Continue weaving until you have four lines on each as in Figure VI, then separate them into single spokes and continue weaving until the No. 1 weaver is used. Start the No. 1½ weaver as in Figure VII, being sure to lap the ends *back* of the spoke.

When the No. 1½ weaver is used take the No. 2, then the No. 3's and No. 4's. When the disc is five inches in diameter begin to shape the basket by bending the spokes from you as you weave, making it like a bowl which should measure six inches from the center of the bottom to the top of the side with diameter across the top measuring eight inches.

With a pair of round nose bending pliers pinch each spoke as in Figure VIII, then soak these spokes for three or four minutes.

The border is made in three operations. First: Pass one spoke back of the next one to the right and bring it to the outside of the basket as in Figure IX. Continue until all are down. The last one must be bent and stuck thru as in Figure X.

Second: Pick up one spoke and pass it over two spokes to the right, and bend it down, holding it with the thumb of the left hand, and continue, allowing the two spokes to lie on top of the thumb, until all are in place. See Figure XI. The last two spokes are bent to pass over and thru the spaces where each belongs. See Figure XII.

Third: Pick up one spoke, fit it into the groove where it parallels, and stick it thru the space made by the first operation. Continue until all are in place.

The Handle:

Insert the two 7¼-inch reeds, one on each side of the basket as in Figure XIV. Now tie the three 10-inch reeds to each handle with a piece of raffia or twine as in Figure XIV. By making a little groove in the No. 7 reeds at each end where they rest on the side handle, these cross pieces will not slip out of position.

Insert the long No. 3 weaver on the right side of the spoke where the handle enters the basket and fasten the end by weaving in and out of the basket across a spoke. Now bring the weaver up and around the handle as in Figure XIV and weave across the handle and enter the basket from the outside, then across the spoke on the inside of the basket and then thru to the outside of the basket. Now bring it

up and parallel to the first winding, then under the group of three large reeds and over, winding about 1½ inches apart across to the other side of the basket, and wind this handle to correspond with the opposite side. Continue winding back and forth from one side of the basket to the other until you have six parallel lines in each group across the top as in Fig. XV.

THE TOOL ROOM

Charles A. Wardner, Supervisor of Manual Taining, Duquesne, Pa.

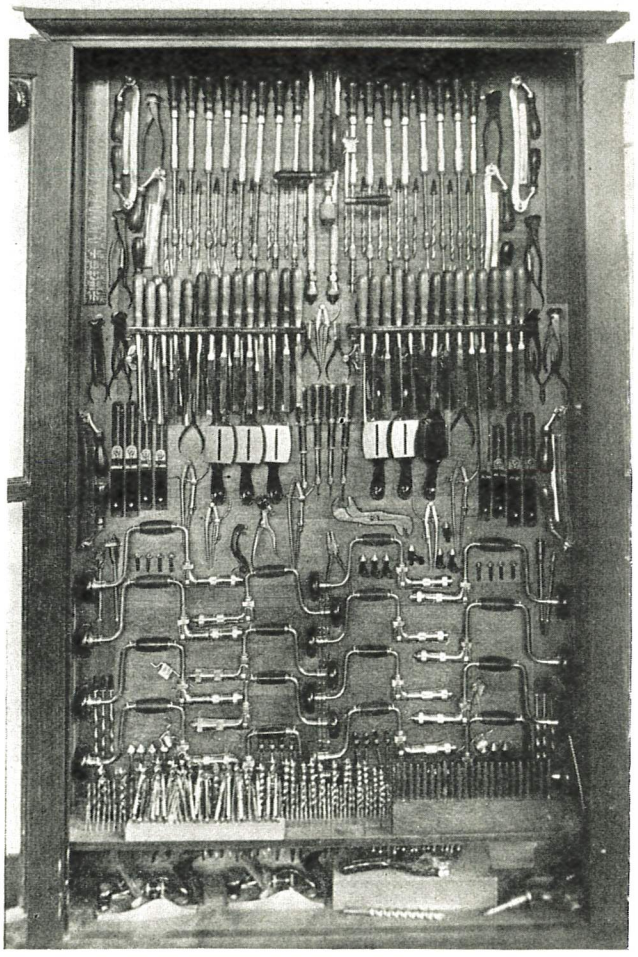
THE problem of how to care for the shop tools has long been a hard one for the young teacher to solve. Unless a tool room is provided and some one to attend to give out tools only on the instructor's orders, the pupils are apt to help themselves when the instructor's back is turned and perform the operation on the wood before the work has been properly laid out and approved. The following outlined plan is being worked out in my school and so far has proven very successful. Doubtless it will be of help to others.

Our equipment is such that only two pupils use the same locker in which to keep their work. As there are two keys to each locker and one master key fits them all, each student has a key. A brass tag is attached to each key on which is stamped the number of the student's bench. On the side of the key is stamped the number of the locker. For instance, 3 on the tag and 6A on the key means the key of the student who works at bench 3 but who uses locker A in bench 6. The benches are in rows of three so 3 and 6 are adjoining. A key board is provided for each division or class, and the keys are collected before the students leave the shop.

A shallow box or tray is provided for each bench, in which are placed a jack plane, two-foot carpenter's rule, try-square, marking gauge and two bench pins. These trays of general tools are kept on shelves in the tool room when not in use. On each bench are kept a bench hook, bench brush and brown canvas aprons hanging on hooks at the end of each bench. All the other tools are kept in a tool cabinet and in special racks and holders in the tool room. The tools are held in place by brass hooks and clips.

The tool room is formed by a wire partition across one end of the shop. The lower part of this partition resembles a store counter and has shelves and drawers for storing stock material. Heavy wire netting extends above the counter in order to not shut out the light. The tools are handed thru a small window in the partition. Thus the boys are prevented from crowding up to the tool cabinet or from helping themselves. A motor-minded student from the ungraded room could be trained to look after the tools, or a student from the regular class could be given the position, which is considered an honor. Last year we picked up a young man who had left school because he had failed to be promoted. He quickly learned to care for the tools and even to keep them sharpened on the universal grinder. His spare moments were spent in study and mechanical drawing.

Between the tool room and the first row of benches is a space for the instructor's demonstration bench and seats for twenty students. As the class enters the shop each student goes directly to his seat before the demonstration bench. The instructor calls the roll, gives a short talk on tools or material, illustrates some point of the lesson by a practical demonstration and then hands out the locker keys as the students file past him in a single line. They then pass by the tool room window and each student re-



Tool Case (open) in one of Mr. Wardner's Shops.

ceives a tray of the general tools. Congestion at this window is prevented by the instructor limiting the speed at which he hands out the keys.

The lockers are located in the work benches, thus there is no delay or confusion in getting out their work. Each student is required to use his own bench and plane and to lay out his work. Then he must go over it and check for errors. Afterward he fills out a small printed slip giving date, model number and tool required. As the instructor passes around the shop he stamps this slip with his O. K. in red ink if the work is found to be correct. The student then takes the slip together with his locker key to the tool room and receives the required tool in exchange. Only one tool is given out at a time to the same student. When he finishes with that tool it must be returned together with another approved slip in order to get another tool. Special material such as brads, screws, etc., are also given out only in exchange for an approved slip stating the material wanted.

As the person in charge of the tool room takes the tool off its hook the key is hung on that hook in place of the tool. Thus it is easy to always replace the tools in their proper places on returning them. The instructor can prevent two or more boys going to the tool window at a time by simply delaying his O. K. of the slips. Also the instructor is entirely free to devote all of his time to actual teaching. In this school one never sees the instructor surrounded by a group of boys each with a partly finished article in his hands waiting for the instructor to tell him what to do next.

A stain cabinet in the form of a table having splash boards is arranged on casters to be moved to any convenient part of the shop. One side of the cabinet is used for oiling and shellacing work while the other side is used for staining. The various stains, oil and shellac are each kept in a large mouth bottle, in the bottom of which is placed a piece of tin bent V-shaped. This keeps the brush in shape, as it is left in the stain at all times. A tin can fits over the top of the bottle and prevents evaporation. The bottle, together with a pair of canvas gloves treated with floor wax, is placed in a covered wooden tray which is labeled and provided with a handle. These trays are kept on a shelf in the tool room and are given out only on an approved slip.

As the signal is given to stop work each student takes his tool to the tool room and receives his locker key. He then puts his bench in order, arranges the general tools in the tray and locks his locker. The instructor himself passes around the shop and inspects the tool trays, benches, etc. If all is O. K. the instructor takes the key and hangs it on the proper hook on the class key board. The student then takes his tool tray to the tool room and takes his place in line. As the last key is collected and the last tray deposited in the tool room, the instructor throws open the doors and the class passes out.

The Tool Room in the Manual Training Shop

Leslie Phillips, Supervisor of Manual Training, Munising, Mich.

THE tool-room is just now one of the much talked of phases in Manual Training circles and is beginning to take a very important part in this work. The tool-room eliminates a large part of the needless work now being done by the Manual Training teachers all over the world. Many a Manual Training teacher spends from twenty minutes to a half hour picking up tools after his class has left. The lost tool feature of the shop work is entirely under control and a neat looking shop with everything in its proper place is the result of a well kept tool-room. There are several good systems which can be worked out to good advantage in the school shop.

The system that we use to good advantage in our shop is the following. We have a small room about eight feet square with too low a ceiling to be used for any other shop practice so we turned it into a tool-room. Shelves and hooks were put up and a place was made for every tool in the general shop equipment. By the side of each tool was placed a cup-hook to receive the check given to the tool-keeper by the student in exchange for the tool wanted. Each bench was equipped with a similar cup-hook carrying ten small brass checks, each check numbered to correspond with the number of the bench. By using this system each class can be checked up for broken and missing tools by a glance around the tool-room, or by counting the checks on each bench. The boys take turns in the tool-room and find it very interesting and instructive keeping the tools in shape and everything in its place.

Teaching Costume Design Thru Paper Cutting

Mary G. McMunigle, Supervisor of Art, Pittsburgh, Pa.

(Third Article)

SO long as there are people the problem of dressing them will continue to be a most important one. We realize how very necessary it is that the pupils in the grade schools shall know something of this important subject of costume design—not that they may become professional costume designers, but that they may have sufficient knowledge to have their own costumes in good taste.

The work should begin in Grade One, where the children are introduced to the subject thru a study of primitive costume of the Indian, Plate 1. The parts of the costume are cut separately and pasted, and the touches of brilliant color it allows, satisfies the child's love of intense color at this age. Comparisons may now be made with modern costumes.

In Grade Two, we cut the parts of the earliest civilized American costume and paste the parts to show action of the figure—adding the blue paper for the sky, completes the composition in Plate 2.

Grade Three, the costumes of different countries are studied and contrasted. Plate 3 shows the contrast of Indian and Pilgrim, while the added difficulty of cutting the figures in action is undertaken and the composition elaborated upon.

In Grade Four, the problem of the Milliner's window, Plate 4, makes an appeal. The supports for the hats give an excellent opportunity to emphasize the laws of spacing while the arrangement of the hats gives a chance for good color distribution and relative proportions of intense and neutralized colors.

The problem for Grade Five is the study of the construction of the head thru the steps shown in Plate 5: The foundational oval which forms the contour of the head in any position; the proportion allotted to the features; the joining of the neck; racial characteristics shown by silhouette and finally the problem of *making a hat fit a head.*

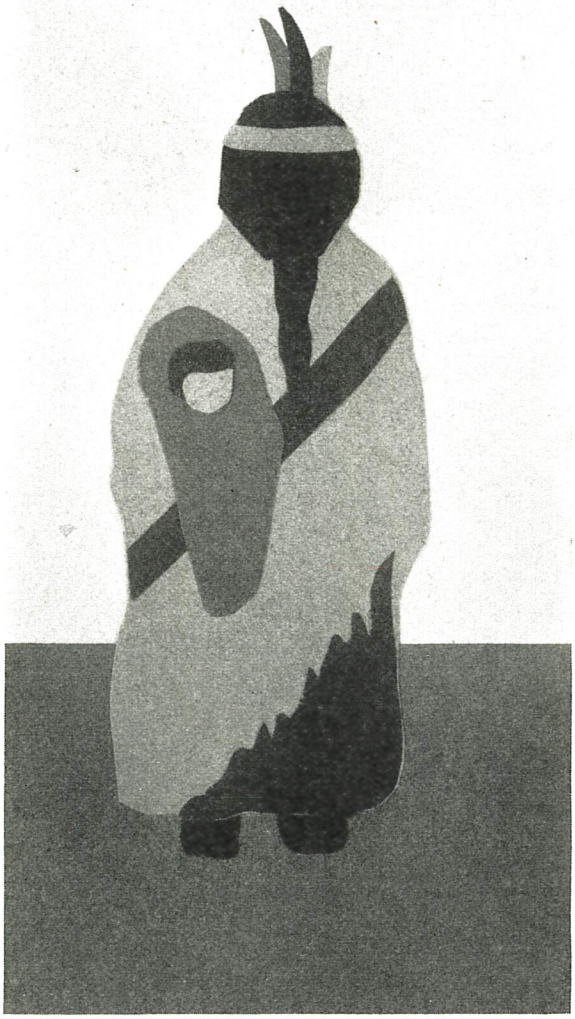


Plate 1. Grade I. American Primitive Costume.

Plate 2. Grade II. Early American Civilized Costume. Parts arranged to show action in the figure.

Plate 3, Grade III. Contrasted Costumes. Direct Cutting of Figures in Action.

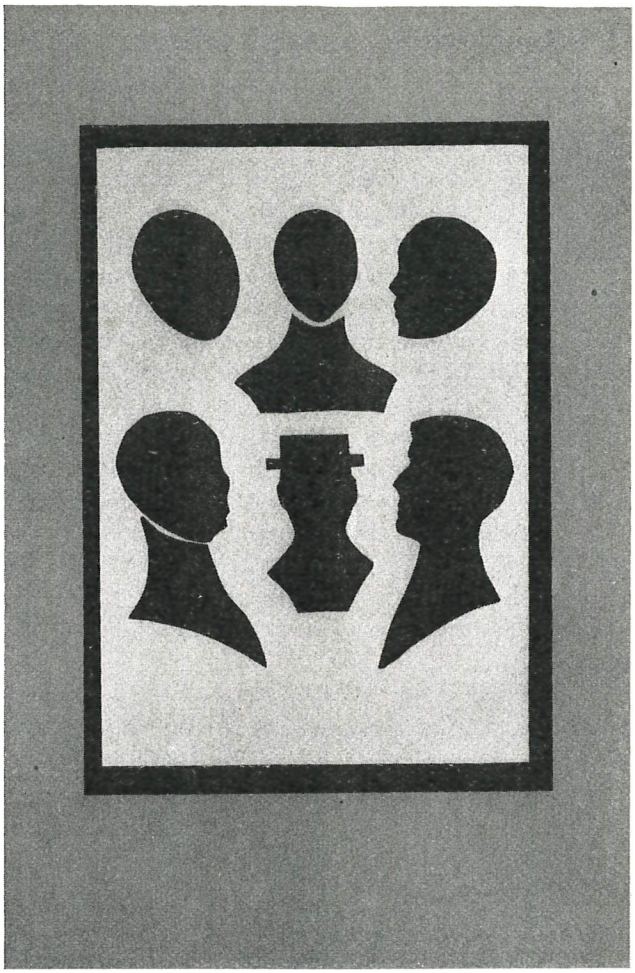


Plate 5, Grade V. Structure of Human Head. Cutting Hats to Fit a Head.

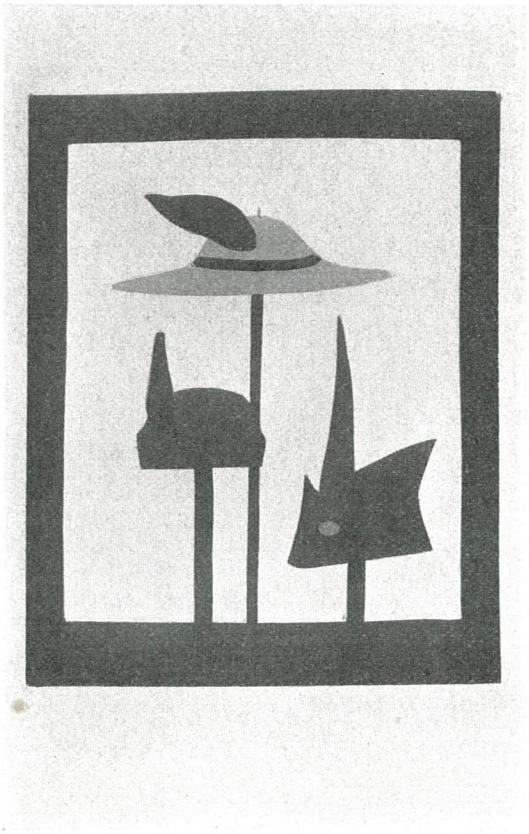


Plate 4, Grade IV. Memory Cutting of Hats Seen in Shop Windows and Original Designs. Balancing Light and Dark.

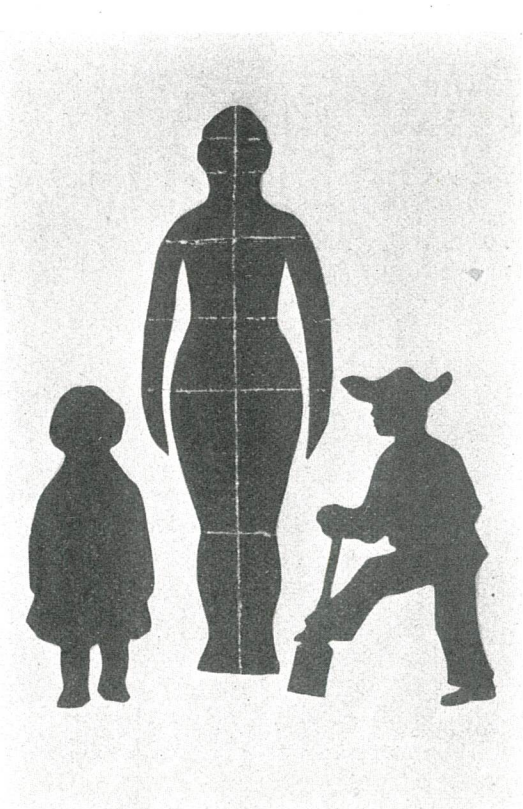


Plate 6, Grade VI. Proportion of Human Figure by Folding. Cutting from Pose.

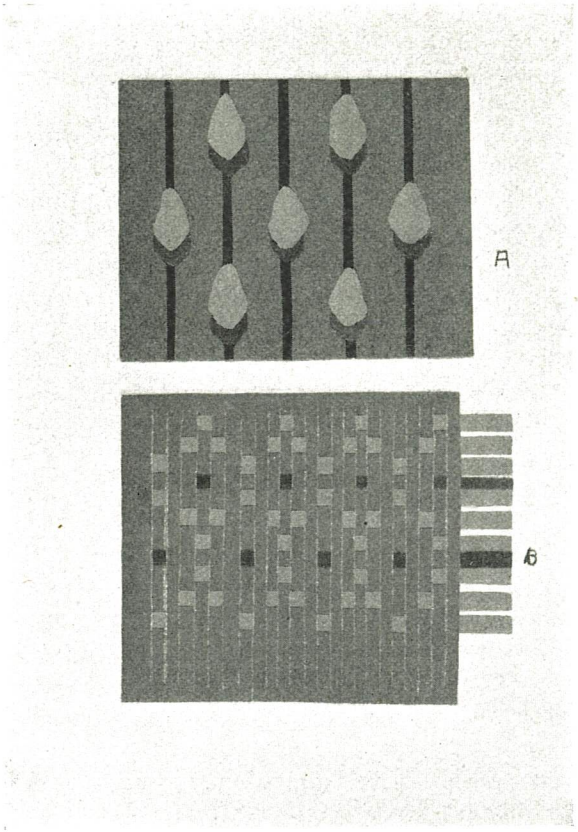


Plate 7, Grade VII. Textile A—Relative Proportion of Color Areas. B—Limitation of Medium.

Plate 8, Grade VIII. Design for Simple School Costume.

In Grade Six we begin the definite study of the proportions of the human figure. The lesson shown in Plate 6 emphasizes the proportions which must be used in sketching later; folding an oblong strip in half, lengthwise, gives the medial line of the figure; a fold in half, crosswise, gives the center of the figure or the end of the torso and wrist line; folding in half again gives the line of the shoulders and knees; folding half way between the shoulder line and center of figure line, gives the waist line and elbow joint. Folding from top of figure to shoulder line gives a line for the lower edge of the ear, while a fold from the top to the last fold gives the upper edg of the ear or the area of the features. A fold half way between lower edge of ear and shoulder line, will give the line of the neck. Following this study of proportions, cuttings from life poses may be tried.

Since the aim of the work is to develop good taste, the study of the textiles (from which costumes are made) and textile designing is a good problem for Grade Seven. In Plate 7, A, a problem in paper weaving shows the limitation of the medium in woven designs. The problem in B, is to emphasize the fitness of the design to the purpose for which it is to be used and to test the pupils' understanding of the laws of color areas and backgrounds.

In Grade Eight the problem of designing a simple school costume for a girl, Plate 8, or a small boy's costume, may be carried out. An opportunity is given to note the effect on the face, of different shaped yokes—round yokes emphasizing round faces, and pointed yokes accentuating thin faces. The costume is studied as a background for the face; should result in an example of good spacing and color combination; a careful observance of the laws of good composition.

"What men want is not talent, it is purpose;
not the power to achieve, but the will to labor."
—*Bulwer-Lytton.*

INDUSTRIAL-ARTS MAGAZINE

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EDITORIAL

A SOLITARY OCCUPATION.

SOME incidents of the spring conventions emphasize one element in the life of the special teacher, especially in a small community. The teacher of art or manual training in a community where he or she is the only teacher of that subject is, in a measure, in a solitary occupation. Teachers of other subjects can discuss their problems with other teachers who have the same problems. Physicians, lawyers, ministers and dentists all have their local societies, but the art or manual training teacher has no local society of persons engaged in the same work.

A teacher under these conditions may easily get into a rut or get in strange ways. The eagerness of the teacher when the opportunity presents itself to visit one of the large exhibits is excellent evidence of a progressive spirit. A visit to a large convention such as those conducted in Springfield and Grand Rapids is the brightest event of the year.

For these reasons, state and sectional organizations of special teachers have been formed. School authorities should encourage their special teachers to attend such organizations, but such encouragement will assume the proper form when accompanied by an arrangement to pay the expenses of the trip. Money spent by school boards in paying the expenses of industrial arts teachers to at least one convention a year will be well invested. Nearly every board sends the superintendent to the meeting of the Department of Superintendence. The next good move will be to send the teacher of manual training and drawing to either the Eastern or Western Drawing and Manual Training Association.

THE ART TEACHER'S DIFFICULTIES.

THERE is much for consideration between the pessimistic comments of the Superintendent of Schools in the May issue of the *Industrial-Arts Magazine*, who appeals to us for an "A No. 1 Drawing Teacher," and the reply to these comments on the part of the art teacher in the June issue, who finds her experience of ten years so discouraging. Of the two, our sympathies are rather with the art teacher than with the superintendent. Conditions have not been favorable to consistent and effective art instruction in our schools; they are not yet favorable. Limited time, poor equipment, mixed classes, and numerous applications of art to school interests and activities, have required the successful art teacher to become a general utility expert.

Art touches upon so many activities of the school, the home, and the community that to bring the proper contact between the school work and these various interests, requires the combined efforts of the whole teaching staff, including the superintendent. The superintendent who made the appeal for an "A No. 1 drawing teacher" asks us with apparent hopelessness if we "know anywhere in this country of a drawing teacher that correlates adequately the work of her department with manual training work, with domestic science work, and with the practical need of life of the average boy and girl." We answer candidly that we do not, but we do know of schools where this correlation is in progress thru the co-operation of several teachers and the superintendent. In the way of correlation between departments the obligation of correlation lies as much with one department as with another. In general, we would advise the art teacher to attempt less rather than more of variety, and to do a less variety of things better.

In a recent exhibit of grade art work we counted thirty distinct kinds of work attempted. It is not necessary for each school to do all of the kinds of work that are done in the name of art to fulfill their function. In art, as in other school subjects, there are various ways of teaching the same subject matter. It is the purpose of instruction that should govern method, and every school exercise should be subject to constant questions of purpose and result. There is little hope of considerable extension of time devoted to art work in the schools, except as all school subjects to which drawing and design apply, partake of it. The teacher of manual training should be a teacher of drawing and design relative to manual training. He may not consistently shift the whole responsibility for design on the art teacher. He may, and should, co-operate with the art teacher as the art teacher may, and should, co-operate with him. The same holds true for domestic science and various other school interests, and we believe that the solution of much difficulty with art instruction lies in this co-operation which the superintendent can promote.

SUMMER STUDENTS.

SUMMER schools have begun. Many thousands of teachers are availing themselves of the opportunities offered by these schools. It is very important that those who attend these schools should get the greatest possible benefit from them.

To make sure of such benefit, one must first of all become a *student* and assume the student attitude. Teachers have become so accustomed to having their own commands obeyed and their own

opinions accepted that it is ofttimes difficult to assume the attitude of obedience to others' commands and open-mindedness to others' opinions.

Of course, instructors in summer schools are glad to have their own opinions and methods discussed and to learn the opinions and methods of those who are, for the time being, their students. However, the prime purpose of those who attend such schools should be to see the work, learn the methods, and hear the opinions of others—notably the instructors.

Sometimes one wonders just why certain teachers present themselves as students, when their whole attitude is that of superior wisdom, self appreciation, and at least mild contempt for anything not in harmony with their views and practices.

The instructor, likewise, should be free from certain of the same faults, among which dogmatism plays no small part.

There is no finer relation than that of teacher and student, when, with proper regard and courtesy on both sides, opinion, investigation, and principle are thrown into the melting pot of common discussion from which each may be able to draw refined, clarified, and enriched conclusions.

AN OPPORTUNITY.

The war has brought with it a shortage of almost all forms of raw material. In making up specifications this year it is not so much a case of what you want, as what the market offers at a reasonable price. This suggests an opportunity.

Adapting oneself to unusual conditions is always a difficult task. Teachers very often prefer to proceed along cut and dried lines without disturbance or interference. Using last year's idea is so often preferred to the new idea which upsets routine and custom.

The shortage of raw material should suggest to the teacher the opportunity of trying new ideas, new methods, of making the stringency the reason for constructive experiments. Poverty sometimes teaches people really how to live and so the present unusual condition should suggest at least the adaptation to a condition without friction or disturbance.

ART AND HUMANITY

"Gentlemen, the art of the future is going to come closer to humanity than it ever has before. The industrial world of the future is going to *lap-over* into the realm of art more closely than it ever did before." So states John D. Shoop, Superintendent of the Chicago Schools, to the Association of Commerce of Chicago.

These two statements are in their proper order. First, Art will come to humanity. Then industry will "lap-over" into the *human* realm of art. We believe the author of these statements had American humanity and American industry in mind. The first order of business then is for *Art to come to American humanity.* There are many agencies that can help bring art to American humanity. The Associations of Commerce may be strong agencies for this service. All civic, State, and national associations may be of service in this business of bringing art to American humanity.

If these associations wait for the first order of business to be completed before they help industry "lap-over" into the realm of art, they will be delinquent with their own interests as well as with the interests of humanity. In the coming business crisis American industry will need art above other things, because the competing industry of other countries has already "lapped-over" into the realm of art.

At Christmas time a new doll was needed in the household. We went to the department store and the clerk said proudly "we have bought the product of an American firm of doll makers." We knew he told the truth. They were a hideous, over-colored, shabby lot of dolls that would insult the self-respecting juvenile. The success of American manufacture has rested upon mechanical device. American industries have gone abroad with their mechanical devices. American mechanical devices are rapidly becoming established in European industry. We learn of French makers doubling their output thru the installation of American machinery. America's one defense against the cheap labor of Europe is her mechanical genius. When America has marketed her mechanical genius abroad she will have little else than raw material to market unless industry "laps-over" with art to produce better American-made goods.

WHERE ARE THEY PUBLISHED?

AMONG the great number of excellent school publications that come to us, we find a good many with the rather striking omission of address or place of publication. In some, the address could be found only in the advertisements. In a few, the name of the town or city could not be found at all.

One of the first questions that comes to one's mind on receiving a school paper is, "*Where* is it published?" To be sure, a little school paper may be only for local distribution; nevertheless, it will circulate in a limited way outside of that locality. Even for local circulation, as much should be made as possible out of the advertising and interest arousing possibilities in the use of the name of the home town. Besides, such use shows loyalty and pride.

There are at least three places where the name of a publication and the town or city in which it is published, may reasonably be expected always to be found. These places are the cover, the title page, and the editorial page.

PROBLEMS AND PROJECTS

A JIG FOR GRINDING TOOLS.

Wm. A. Carter, New York City.

The experience of two years has taught me that it is practically impossible for eighth-grade boys to grind chisels or plane irons without getting all sorts of bevels, round and hollow ends. I therefore set to work to devise a jig by means of which the ends of the tools would be ground straight across and the bevels ground at the proper angles. The device here illustrated has been in use on our emery grinder for five years and has given excellent results. The grinder was at first a foot power machine but is now run by a motor.

Figure I shows three views of the jig arranged for grinding smooth plane irons. The bottom, or bed, may be screwed or bolted to the framework of the machine. The dimensions of this part of the jig will differ for different machines; a grinder having two wheels will need a longer bed than a one-wheel grinder. The thickness or height of this piece should be big enough to bring the tool being ground, at the proper height on the emery wheel. The piece "A" having been made the proper size, get out two strips "B" as long as the piece "A" and about an inch wide, and after beveling one edge, glue and screw them to the "A" piece so as to form a dove-tailed groove.

The blocks "C," "D" and "E," Fig. 2, are designed to hold chisels, smooth and block plane irons respectively. These blocks are made from a piece of 3″x3″ oak or maple and are about 6″ long. The thickness and the angle of the top face of these blocks will depend upon what the block is to be used for, i. e., chisel or plane iron, and upon the height of the wheel above the framework of the machine. The slot F (see block E, Fig. 2) in the top of the blocks is made wide and deep enough to hold the plane iron or chisel tightly when pushed in under the cap piece "G." The dovetail tongue is made separately and then glued and screwed to the bottom of the block. When completed, the blocks should slide easily along the bed from left to right but should not be so loose as to wobble or clatter.

The tool to be ground is inserted in the proper block and pushed thru the slot, until the end to be ground touches the emery wheel. The block is then moved back and forth across the face of the wheel, until the end of the tool is properly ground. With this device any boy can grind a plane iron or chisel properly. The only precaution necessary is to guard against burning the tool.

THE SCOOTER-BIKE.

M. J. Sherwood, Kalamazoo, Mich.

In response to an urgent request from the home circle of the writer, the "Scooter-bike" shown in cut was hurriedly put together with material found close at hand. The cut will give the general idea and the details can be worked out according to the ingenuity and individual ideas of the maker.

The handle-bars and seat were taken from an old bicycle in this case; however, a broom-stick would answer for handle bars and a seat could easily be formed. New roller bearing wheels (roller skate wheels) were used but any available wheels would do and, in fact, a large wheel would be better.

The triangular shaped, half-inch board above the axle in the rear is not only intended for a brace; it is made in this

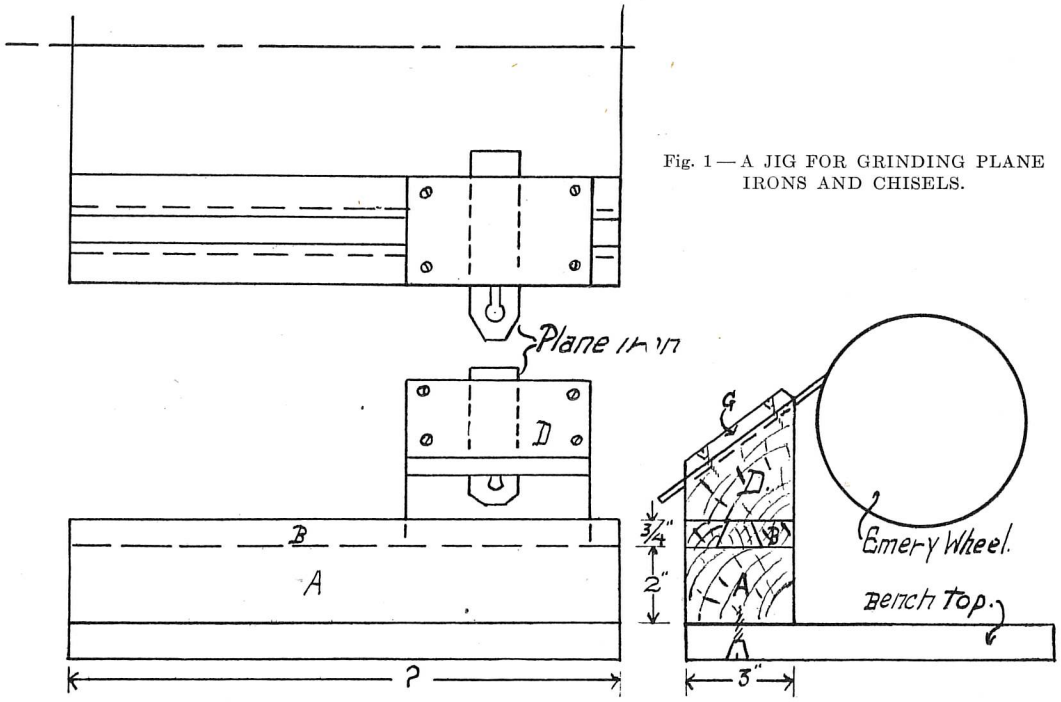


Fig. 1 — A JIG FOR GRINDING PLANE IRONS AND CHISELS.

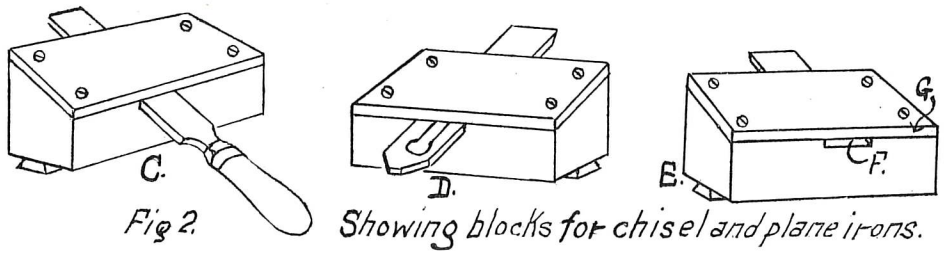


Fig 2. Showing blocks for chisel and plane irons.

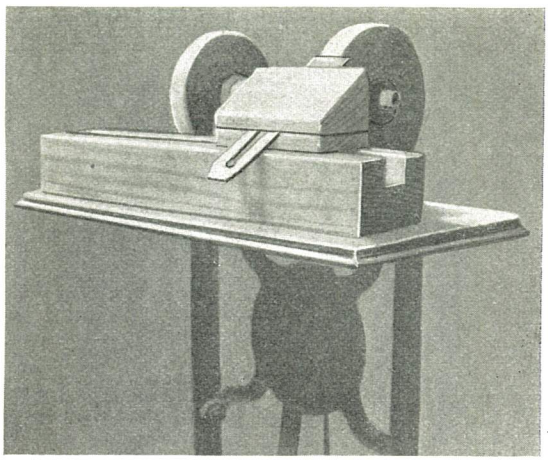
particular shape so that extra passengers will not find an easy foothold and thus add extra strain to the frame.

The leather seat is fastened firmly to the seat-block and this in turn is fastened with two large screws 5″ apart, to the frame. As there are several holes one inch apart in the frame, the seat can be raised or lowered by changing these two screws.

The large screw in the lower end of the one-inch dowel rod (shown in detail A) was added only after the first one-inch rod failed to stand the test of service. Since this addition there has been no trouble whatever and the "Scooter-bike" is in almost constant use every day, it being sufficiently "different" to appeal to every youngster in the neighborhood.

Oak, maple and pine were used in this model. The necessary strength and desirable lightness of the different parts offer interesting problems in the choice of materials to be used.

As this was only an experiment stimulated by home requests instead of school-shop needs, the value of this project as a shop problem did not at first appeal to the writer. But after a few weeks of "results" the real value is very evident indeed.



The Jig in Use.

DEMOUNTABLE BLEACHER.

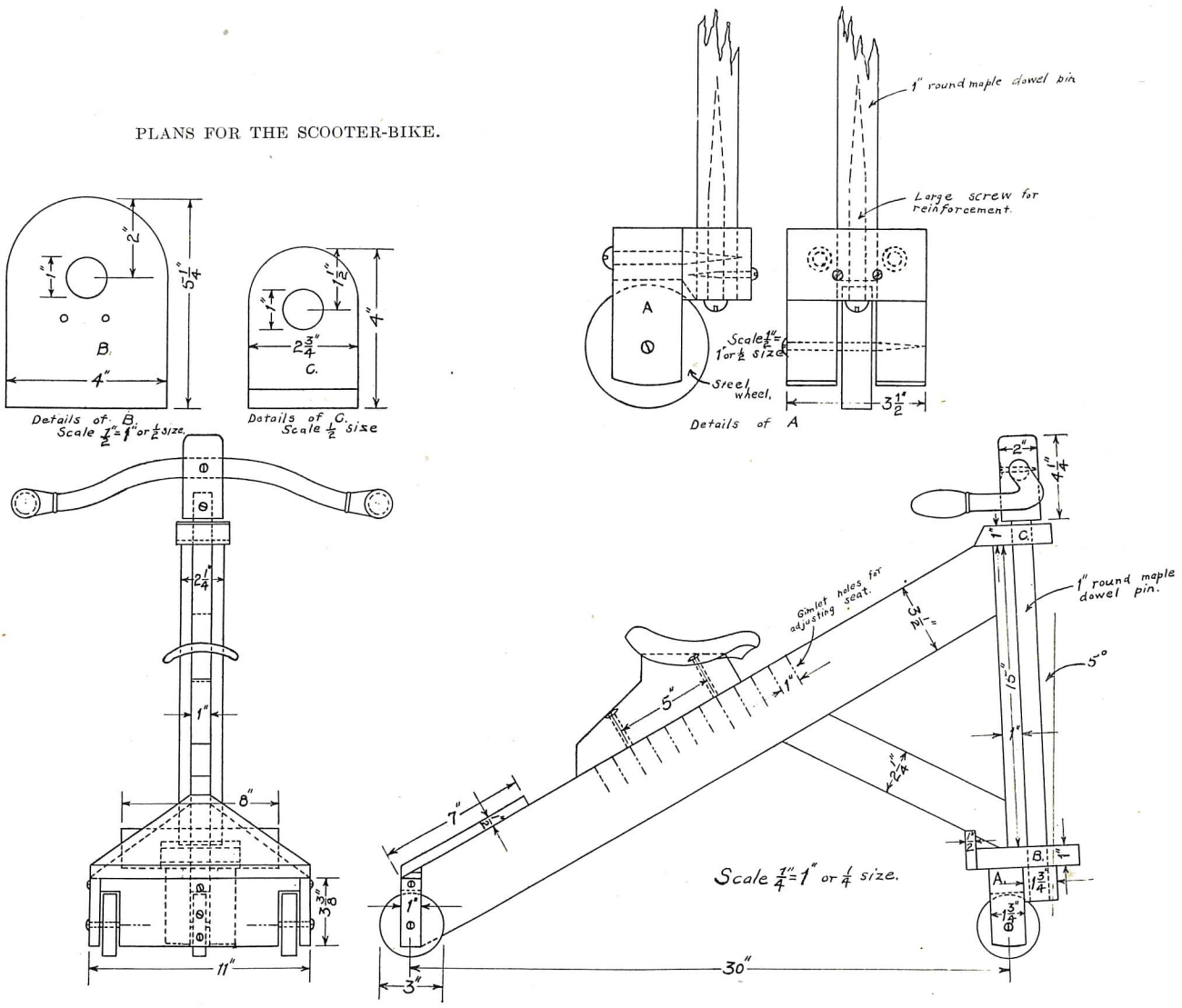
R. F. L. Biesemeyer, New Trier Township High School, Kenilworth, Ill.

A well constructed bleacher of the circus type that can be taken down easily and stored, will be found to be a very valuable addition to the equipment of any public school or Y. M. C. A.

When the big basketball games of the season are being pulled off then every inch of available space in the gym must be used for seating the spectators. A carefully planned bleacher that can be put up and taken down quickly is a great convenience and will materially increase the seating capacity of the gym.

The demountable bleacher can be used to good advantage

PLANS FOR THE SCOOTER-BIKE.



The Scooter Bike.

on the school platform during graduation exercises or recitals. The elevation adds much to the appearance and convenience of those on the platform.

The New Trier Township High School at Kenilworth, Ill., has discovered the real value of the demountable bleacher. On the football and baseball field there are five portable bleachers with capacity of one hundred each. These bleachers can be moved about the campus on very short notice to accommodate the gathering.

In the boys' gymnasium two demountable bleachers of the type as shown in the cut are used to good advantage. Each bleacher has a capacity of 250, making it possible to seat five hundred more people on special occasions. One large demountable bleacher with a seating capacity of three hundred is a very useful adjunct to the auditorium stage.

The manual training departments in many schools could improve their time by making community projects of this kind and add to the accommodations of their school.

One of the seven bleachers designed and built by the manual training department of the New Trier High School last year is shown in detail in the cut and is suitable for indoor use. In looking over this detail one will be impressed with the substantial way in which the bleacher is built. The impression one may get is that it is built heavier than need be; to this it may be said the supporting members are somewhat larger than necessary to carry the load, but are no larger than required to stand the abuse to which they are subjected. These 2″x8″ supporting members should be of long leaf Georgia pine surfaced all over, cut as shown and spaced five feet on centers. The fastenings to the wall at the upper end are to prevent movement sidewise as well as to hold the beam up, and it is important that the iron angle be well bolted on for there is considerable danger of the wood splitting at this end. At the lower end of this beam it is necessary to have a slotted floor plate set into the floor and a piece of machine steel with slotted holes made fast to the beam end so arranged that it can be slipped into floor plate when beam is in position.

Bill of Material.

10—2″x 8″—10″ Georgia yellow pine.
15—1″x 12″—16″ Georgia yellow pine.
12—1″x 6″—16″ Georgia yellow pine.

Iron M. S.

65—$\frac{1}{4}$″x 1″
100—$\frac{1}{4}$″x 1$\frac{1}{2}$″
30—$\frac{3}{8}$″x 1$\frac{1}{2}$″
100′—$\frac{3}{16}$″x 1″
20′— $\frac{1}{2}$″x 2″

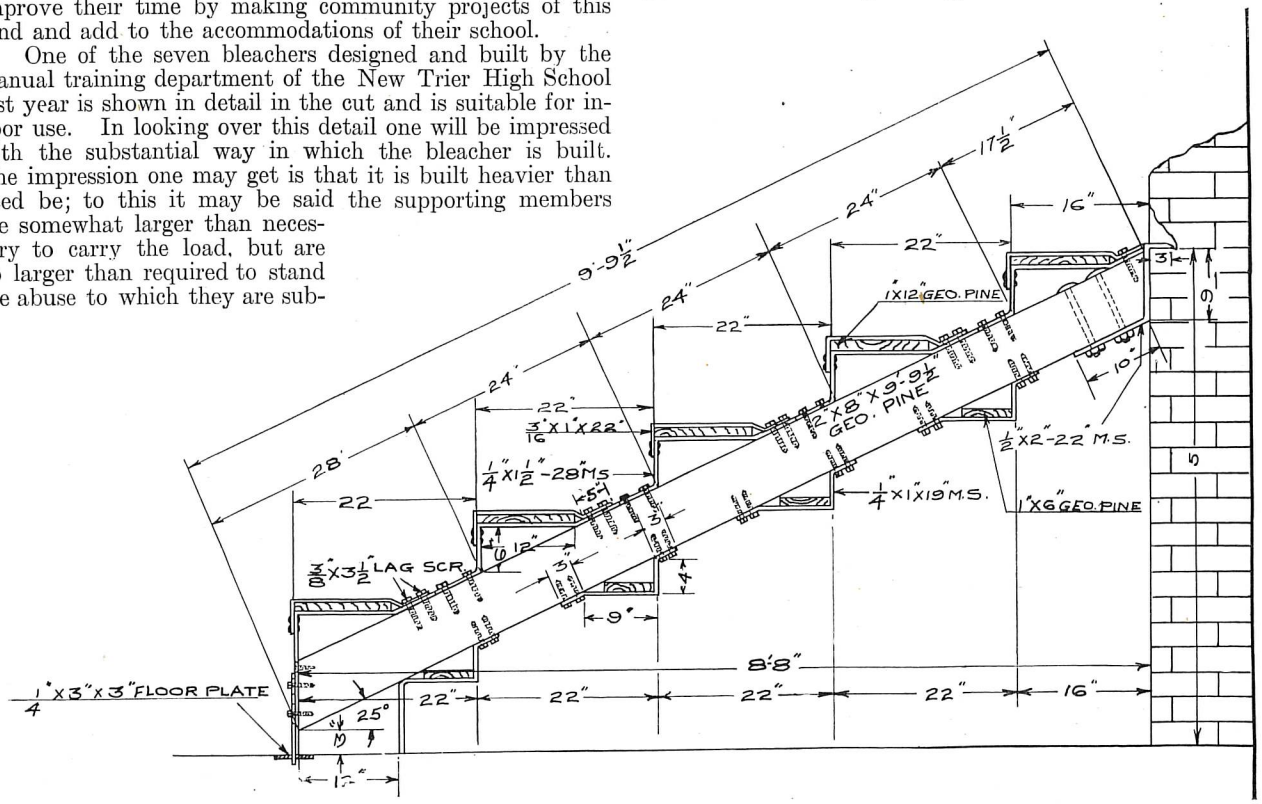
Bolts.

20— $\frac{1}{2}$″x 9″ R. H.
200— $\frac{3}{8}$″x 3″ sq. hd. lag scr.
200— $\frac{5}{16}$″x 2$\frac{1}{2}$″ sq. hd. lag scr.

The seat and foot boards should be of long leaf Georgia pine of sizes as shown, finished all over and the edges rounded. The machine steel angles which support the seat boards should be made large enough so that the boards may be pushed in from the end; if the bleacher has many sections the joint of the seat and foot boards should come over the beams, that is, the end of two adjacent seat boards should come together over or on a brace. Each board and iron support should have a small hole drilled in them, into which a nail or stove bolt may be placed to prevent end movement of the boards.

The iron work should first be cut to length and then layed out and the holes drilled, after which they should be bent to shape. This may be done by the use of the vise or angle bender. The small material may be bent while cold but sharper angles may be had if worked while hot.

Pilot holes should be bored for the lag screws and they should be started straight and pulled up tight. In building this bleacher, if the plan is followed and the construction work is good you will not be disappointed, for you will have a bleacher that will give long, hard service.



Plan for Demountable Bleacher.

A HALL CLOCK.

Clark Woodward, Murfreesboro, Tenn.

This problem has been constructed in our shops very successfully of walnut, mahogany and oak; oak or walnut is preferable because it lends the proper texture and finish to the general design.

The back is paneled all the way up; the sides of the encasements for the movements are of solid material with designs depressed one-eighth of an inch. The sides below and the bottom are open. The case is designed especially for weight movements; spring movements may be used, the latter being much cheaper.

We never permit the use of any material or device in our educational shop that partakes in any way of an imitation of the original, unless it be in the nature of stains and finishes; and the latter we do not encourage with much vehemence.

We placed a "real" mahogany dial in this case with "real" copper figures and hands sawed from 20-gage copper; we could purchase brass figures and hands for a small amount but it was a splendid exercise for the student to saw them out with a jeweler's saw and to design original characters as he went along.

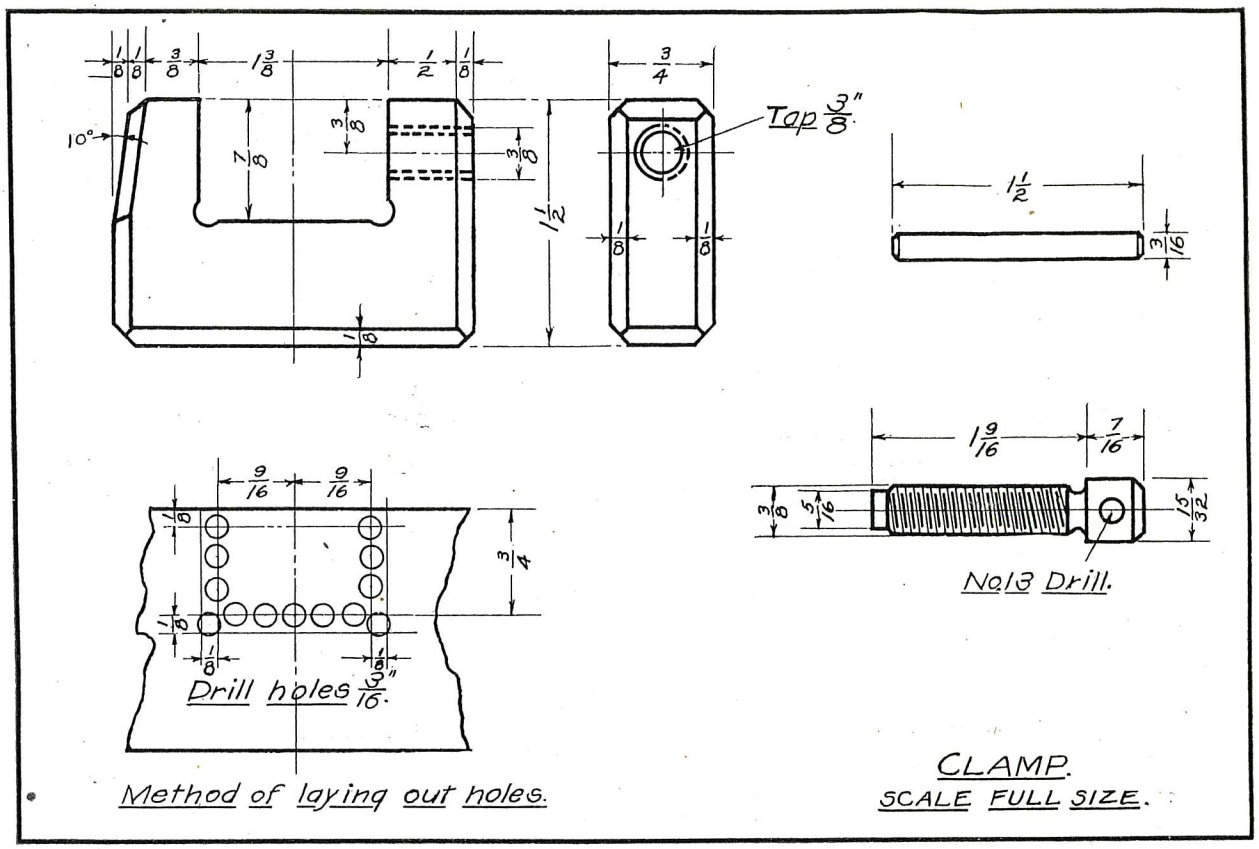
The top may be actually shingled with well dressed shingles of the same material but we "imitated" shingles in this case by sawing and grooving them from a solid board glued up. The problem had three coats of wax following one thin coat of shellac on the stain.

CLAMP.

Edward Berg, Washington High School, Milwaukee, Wis.

The metal workers' clamp is useful in holding pieces of metal together while working with them in drilling holes, etc. It is a problem which involves the removing of stock by drilling, which is a typical machineshop process.

The piece is sawed from a bar of $\frac{3}{4}''$x$1\frac{1}{2}''$ cold rolled steel. Two large surfaces are cleaned and coated with a marking solution. The piece is then laid out as suggested by the drawing and carefully center-punched. Oil should be used freely in drilling and care should be exercised in starting the drill. The waste stock can be removed by chipping with a cold chisel after the piece has been drilled. The piece may then be used as an exercise on the shaper or it can be used as a filing exercise. In either case the surfaces are finished smooth with the file. The hole for the screw is laid out and drilled carefully, after which it is tapped. Care should be



taken in selecting the tap drill, which should be large enough so that the tap does not cut a full thread.

A $\frac{3}{8}$"x1$\frac{1}{2}$" long, cup-pointed set screw is used in the clamp, or a special screw as suggested in the drawing may be made in the lathe.

PUTTING A BAND ON GATHERS.

Marian Whitwood, Tulare, Cal.

To avoid unsightly ends and to finish a band neatly, corners should always be "locked." Always make a band lengthwise of goods and 2" longer than the waist measure. Pin into place so that first seam will come on *right* side of garment, if work is to be done by machine, and on the *wrong* side if it is to be done by hand. Leave about $\frac{3}{8}$" beyond edge of garment on each end as in Fig. I. Baste with gathers held uppermost. Stitch, raise band and press flat. Fold ends of band toward under side the $\frac{3}{8}$" left for the purpose. Now turn other edge of band as for a hem, folding to cover last stitching. Slip the upper folded edge under the lower corner at each end and pin into place. This is what is termed "locking the corner." No corner nor raw edge is now visible, if directions were followed exactly. Baste. Overhand ends, beginning at basted edge and working toward fold in all cases. Stitch band into place (or hem, if work is being done by hand). Fig. II shows finished band when stitched by machine.

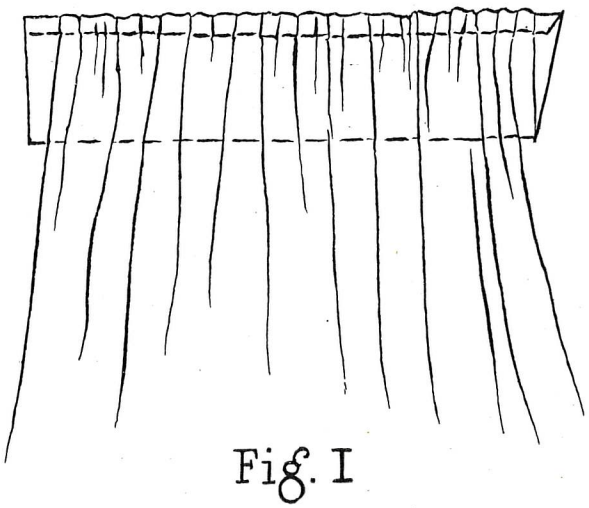


Fig. I

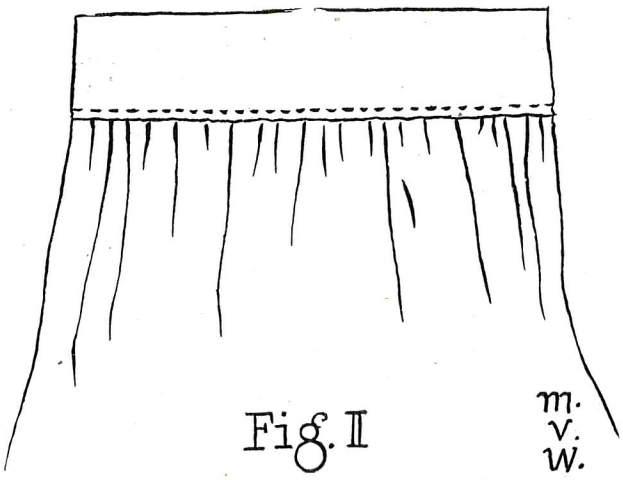


Fig. II

M. V. W.

Personal Efficiency or Forming Correct Habits

R. W. Hargrave, Menasha, Wis.

We hear a great deal about helping the boy to select a vocation, but how much do we hear about the details of his personal efficiency?

A plant employing about three hundred men was obliged to reduce its force until there were only three mechanics employed in its shops. Three men left out of about three hundred. Why these three and not some other three? Luck? No. Lower wages? No. Because they were better mechanics? No. There were others just as good or better than these.

A superintendent who was working with a reduced force said to the writer, "Yes, times are rather slack with us, but I will take on a man, or a boy, any time that you will recommend one. I will take any one that can, and will, reason in the terms of and about the work that he is doing or going to do."

This answers the question as to why the three men mentioned above, and not some other three, were retained. Of course they were good workmen, but in the final analysis they could be relied upon because they reasoned about their work.

Employers are asking for more and better workmen. But are they not just as strenuously asking for satisfactory workmen? A person may be a very fine workman and not a satisfactory employe. He may be a satisfactory employe, and merely a roustabout for the time being.

Have our schools partially lost sight of the satisfactory employe end of this matter?

It has been said that the ability and willingness to do *what one is told, as one is told, when one is told,* are the fundamentals of a good workman, and a satisfactory employe.

The person who has these qualifications will rarely be found without a job. Lacking any one of these three his employment is liable to become unsteady. Add to these three qualifications the one of reasoning about the job and we have the higher type of workman who need never be long out of employment.

What definite plans for getting the students into the habit of living up to these fundamentals, have the manual training and industrial departments of our schools? Perhaps some of the work that the writer has tried along these lines may be of interest.

Among the difficult students in our schools there is the bright boy whose mind wanders. He works with his hands on the job but his mind is on the football team, the baseball team, the dance or something else besides his work. Then we have the physically active boy who is lazy brained. He is willing to work with his hands but would rather ask a question than exert his mind to think out a problem. Then there is the student who is habitually doing things in some other way than the one he was told.

To overcome conditions caused by the presence of persons in factories similar to the boys described is one of the functions of socalled scientific management. The writer had done considerable practical work in the preparation of instruction cards for use in shops under the Taylor system of management, and he determined to try the use of simple instruction cards of this kind in his school shop.

In the use of these instruction cards in the schools the first essential was that the work assigned be done within the time limit set. If not finished within the time set the piece was thrown away and a fresh start made. This was to teach and form habits of concentration.

The second essential was that the operations on the work be done successively, in the order in which they were given in the instructions. This was done to assist in the formation of logical habits.

The third essential was that the operations be done in the manner called for in the instructions. This was to teach correct methods.

The quality of the work called for was given little consideration in the beginning of this practice. A short explanation of the purpose of the work was made to the student and he was handed the material and the instruction card with the further injunction that he do just what was called for and nothing else. No further information was given. It was found that some of the students could not correctly interpret simple English sentences. Their interpretation was loose. For instance: When told to mark a line on the end of a board, they made it on the side or edge near the end. When told to do something on the ends, they missed the plural entirely and performed the operation only on one end. Such words as each, or both, were read over without apparently being seen.

At first the students found it difficult to hold themselves to the instructions. They would do things not called for at all, and they wanted to skip around, doing the operations as they pleased instead of in their logical sequence as called for. These conditions were found to exist, not only in one school, but in every school in which the writer has tried these methods. While the work appeared hard for the students at first and there was a tendency to dislike it, yet the boys soon saw its benefit and grew to enjoy it.

The effect of using these methods once a week, for a few weeks, was very pronounced. It tended to speed up the work of the class. I think this was largely due to the fact that the students came into the habit of logically concentrating their minds upon their work.

If we are able then, in the industrial departments, to give the youth the proper training, to get them into the habit of concentrating their minds and logically reasoning about the work that they are doing, they will be better fitted for any work that they find to do. We shall then have a greater number of satisfactory employes as well as better workmen.

After the Shop Has Been Closed for the Summer

J. W. Jones, Strawn, Ill.

I wish to express my pent up emotions upon a certain "shop." I trust, gentle reader, that the description will not hit the one you went away and left for the summer, neither will it jar your esthetic sense to such a degree that you will class me along with the rest of the world's knockers. But if you did, I trust that there will be brought to bear on you or your conscience such a force as will induce you to return to the shop and straighten it up. You, who are so careful to see that all is ship shape before leaving, will not believe that there is such a shop in a well governed and well regulated high school. You will not believe, you teachers of industrial arts in a leading school, that you have turned out a piece of "shop work" that would go out and teach a year and then go away for the summer and leave his first shop in the condi-

tion that I saw it this morning. And because this teacher was not reelected for the coming year does not justify or excuse the shop I wish to write on. To me as a superintendent of schools, the very fact that this young instructor has left his shop in this condition is enough to blackball him from my list for some time to come. But before going further in my lecture to the coming year's teachers and to the instructors for allowing such students to be turned loose to teach, let me show you in a casual way the shop that has caused this outburst.

This school shop was installed only year before last, when the work was taught before and after school hours by one of the teachers, who donated his time and efforts to show that manual training as a school subject was a good thing. The work went on for a year in this manner and the shop made good to the extent that the board of education put the work into the regular courses of both the grade and high schools and added a specially trained teacher to handle the work. School has been closed in this little railroad town now for two weeks and I wished to visit the building and look it over. Tucked down in the basement where most shops are put I came across the "remains." It is of necessity a small shop and there are but few benches and yet I have never seen so few things cluttered up as much as were these shop benches. They are not fastened to the floor and where there had once been regularly arranged rows there now appears a chaos that is well nigh impassable. One of these benches is typical of them all. The bench tools were scattered around on top, none of them in their proper places. Three jack planes lay at one side with all the parts scattered around. A half finished project was littered over the remaining part of the bench, and the general appearance was similar to the remains after the passing of a tornado. The tool rack was utterly neglected. Some of the most used tools were hung on the most convenient pegs and the rest were well placed. The bits were in a jumble. And yet this same tool rack was the best arranged part of the entire shop. The lumber rack was rather a lumber "pile." There is a bench built along one wall for staining and dyeing of finished pieces and on this were the empty and half full cans of stain, some closed, others left open; the brushes lying across the tops uncleaned and hardened. And this is a meager description of that part of the school system where the boy should be taught to be methodical, to be careful of his tools in order to better become a skilled workman, where habits of accuracy should be secured, where he should learn that in life everything has a place and should be in its place.

I do not doubt in the least that ninety-nine out of every hundred shop teachers go away and leave their shops in the way they should be at the close of the school year. But it is my purpose to bring to the attention of this hundredth one who does not do so, who leaves his shop in the same condition as the one which caused this paper, the damage he is doing to three factors: the school, the industrial movement, and his profession. If some of the people of the town, who are opposed to manual training, should see such a shop, would the best argument in the category of arguments for the work in the public schools in any way affect the bad impression he would get from such a shop? Mr. Teacher-of-this-shop, should you read this article, stop and consider the bad results caused by the neglect of your duty to the industrial work in this school. Do you think that your pupils will keep orderly shops of their own, keep their benches in order if they see the whole shop in such a turmoil? When those who are interested and working hard for the advancement of the industrial phases of education must see the efforts of a school year terminated in such a manner, there arises the demand for better trained teachers, or should it be better spirited teachers? The worst result of all is the result to the profession of teaching. For a shop teacher trained in a leading normal school to close up this year's work and not leave the shop in good order is, I think, a reflection on the work of the school. Then let it develop into an appeal for a better spirit of loyalty to the work we are in, and even if the board of education does not see fit to retain us another year, let us so close up the year's work and so leave our school shop that each will be a recommendation to our ability and efficiency and to the worth of industrial education.

SOME ART PRINCIPLES IN HOME DECORATION.

At a recent exhibit of house furnishings at the Art and Trades Club in New York City, a pamphlet prepared by Wm. Sloane Coffin, Frank Alvah Parsons and William Macdougal Odom was distributed.

The leaflet contains some fundamental principles of form and color as they are related to the decorative treatment of interiors. The outline will be of interest to teachers of domestic art.

The Principles of Form.

Consistent Structural Unity

Leading articles of furniture, such as rugs, tables, sofas, bookcases, desks and large chairs, should be arranged so as to follow the structural lines of the room itself. Side chairs and other small articles may be informally arranged to lend variety to the room.

Balance

Balance is the principle of arrangement thru which rest is obtained. There are two kinds of balance: bi-symmetric and occult.

Bi-symmetric arrangements express dignity, repose, formality, and simplicity of feeling.

Occult arrangements are more subtle and interesting; more varied and less formal; more complicated and less certain.

Movement

Movement is that principle of arrangement thru which the eye is led from one point to another. This destroys rest. Consistent movement is a movement by which the eye is led in a consistent manner thruout the composition.

(*a*) Movements in opposition are distracting and unrestful.

(*b*) Rhythmic movements express ease and grace.

(*c*) Lack of movement is complete rest.

Emphasis

Emphasis is that principle of arrangement thru which attention is called to only such things as are important in each composition and to these in the order of their importance.

Relative Space Division and Sequence

The division most pleasing to the eye is between one-half and one-third, for the obvious is uninteresting and the subtle is attractive. For the same reason there should not be a direct sequence of increasing or decreasing sizes.

The Principles of Color Harmony.

Psychological Significance

Color, as it varies in hue, value and intensity by its intrinsic qualities and the association of ideas, excites certain definite thoughts and feelings in the human mind.

Hues

Blue—cold, formal and distant.
Green—cool and restful.
Yellow—cheerful, brilliant and unifying.
Red—warm, rich and aggressive.
Orange—hot, striking, but decorative.
Violet—mournful, mystic and darkening.

Value

Light color tones express youth, femininity, gaiety and informality.

Dark color tones express strength, dignity, repose and seriousness.

Colors in their full intensity are strong, loud, vital and elemental in feeling.

Colors that have been neutralized express subtlety, refinement and charm.

Kinds of Color Harmony.

Analogous Color Harmonies

Analogous or blood-related color harmonies are those harmonies in which the tones used are made by mixing two

primary colors only. Such combinations as yellow and yellow-green, green and blue-green, red and red-violet, orange and red-orange, yellow and yellow-orange, are analogous color schemes.

Complementary Color Harmony

Complementary color harmony is the harmony produced by the use of opposite colors in the spectrum circuit.

The principal complementary schemes are red and green; orange and blue; and yellow and violet.

Balance in Color Harmony

Colors to balance in harmony must be similar in intensity and area. If dissimilar the intensity must vary in inverse proportion to the area.

The Decorative Idea.

In General

Decoration is material added to other material for purposes of beauty.

Decoration should follow structure and give emphasis where required.

Decoration exists for the thing it decorates and not for itself.

Decoration should not interfere with use.

Backgrounds

Backgrounds should be related to the objects which are decoratively placed thereon.

Backgrounds should be less intense than objects to be shown on them.

People are the most important objects in a room; therefore, neither color nor pattern, in the background, should have a stronger attractive force than they.

Personality in the Room

The room should always express the individuality of the person for whom it is to be an environment.

CONTINUATION SCHOOLS IN MASSACHUSETTS.

Some of the results of a year's experience in administering compulsory continuation schools in Massachusetts are summarized in a pamphlet recently issued by the Massachusetts State Board of Education.

The Massachusetts plan of continuation schools involves three general types of instruction: (a) pre-vocational which involves shopwork and related academic study, (b) general improvement classes which are intended to continue the general education of the children and to help them discover a vocational bent, and (c) trade preparatory courses in which shopwork and academic work are both related directly to the children's future occupations.

In general the board has found that practically all children who have attended continuation schools have given evidence of valuable knowledge and greater industrial intelligence as the result of the instruction at the continuation school. Many pupils have been directed in the better industrial positions and genuine vocational guidance has become possible.

It is the plan of the Massachusetts continuation schools that pupils enter reservoir classes from which they may be assigned to one of the three general courses noted above. The reservoir class permits a period of work that affords a basis for rational choice thru the discussion of pupils and the careful consideration of the tests and interests of the children. In making assignments from the reservoir class, the first choice is between a commercial and an industrial beginning. When this choice has been made, the opportunity for definite training in the chosen field is limited only by the resources of the school shops and the possibilities of satisfactory placements.

In the experience of the Massachusetts authorities very little definite trade extension training can be given in the continuation schools. Exceptions occur in machineshop work and printing, for which occupations much can be done. Twenty-five per cent of the boys enrolled in the machineshop course and forty per cent of the boys in the printing course of the Massachusetts continuation schools are actually employed in industrial establishments for which the schools give them direct instruction.

MR. FRANK H. BALL

Mr. Frank Ball, who has just assumed the presidency of the Santa Barbara Normal School, has been engaged in the work of industrial education during the past 26 years. He has taught at various times at Teachers College, at Dr. Dewey's elementary school in Chicago, at Throop and at the Polytechnic Institute. He has been director of five industrial schools in Porto Rico and has supervised industrial education at Cincinnati and Pittsburgh. Mr. Ball has written and lectured extensively on industrial education topics. As head of the Santa Barbara Normal School, he will have an opportunity of putting into practical effect the experience and observations of more than a quarter of a century of consistent effort for vocational education.

The Massachusetts authorities have found that the continuation school has had a good influence on the attendance of children at the regular schools and on the tendency of those out of employment to return to school. The continuation school has prevented very effectively the loafing of children who are out of work and out of school.

Speaking of "blind alley jobs," the experience of the Massachusetts authorities is interesting in that it is diametrically opposed to a popular opinion. Says the report: "A large number of juvenile occupations were formerly alleged to be "blind alley jobs"—jobs which held no possibilities for the future. It is now held that there are relatively few jobs of this character. In most fields of work in which juveniles are employed there is some possible better job ahead. Most of the wage-earning occupations of a community may be said to consist of strata making a pyramid, the smaller and less remunerative jobs being largest in number and comprising the bottom stratum of the pyramid and above these others more attractive but less numerous. Better positions may not be directly reached from places below, but there are possibilities of securing such work if they can be discovered. The continuation school can hold the individual on a job to discover the way to the next job which is better for him. In many occupations into which continuation school pupils go and into which the activities of the continuation school have called its teachers, 95 per cent of the employes have risen from the lower to the higher positions."

The Massachusetts authorities have had unusual difficulty in securing proper teachers. Boston has undertaken to train its teachers with good success. In other communities, it has been found that the compensation offered is insufficient for the experience demanded of suitable men.

The Massachusetts authorities are of the opinion that the present plan of four hours per week should be displaced ultimately by a plan of co-operative continuation work which will permit the children to spend one week at school and one week at employment. The present minimum period of four hours per week involves unusual difficulties for the employer in adjusting his shop routine, and is not sufficient to give the children a great amount of training. The present type of continuation schools is defensible as an initial policy but not as a permanent one.

BOOK REVIEWS

Cookery.

By Mary E. Williams and Katherine R. Fisher. Cloth, 405 pages. Price, $1. The Macmillan Co., New York, Chicago.

This revised and enlarged edition of a standard textbook in the theory and practice of cooking will be welcome. For the grammar grades it is the best with which we are acquainted. The new edition has new chapters on the serving of food and laundering, and much material has been added to every chapter, particularly to the discussion of the preservation of food, food for babies and digestion. The changes which have been made largely as a result of classroom use of the book, adapt it better to the widely varying conditions found in large and small schools.

The Shoe Industry.

By Frederick J. Allen. 327 pages. Price, $1.25. The Vocation Bureau of Boston.

One of our most highly organized and carefully standardized industries is here analyzed and described from a vocational standpoint. The book takes up in order the history of leather and shoemaking, the nature and magnitude of the present industry, the methods and processes used and the opportunities and demands of employment. Personal inspection of many factories, repeated observations of processes, interviews with thousands of operatives, foremen and officials and studies of factory records have been the first hand materials from which the book has been built up. Thruout the author maintains a fine spirit of fairness and impartiality in describing and discussing conditions so that the reader may draw his own conclusions.

The book will be extremely valuable as a vocational text reference book in all sections where shoemaking is a local industry. General readers and students of social economics will find it a valuable document.

Manual Training in the High School.

By. O. A. Hanszen. Bulletin of the University of Texas, 1916, No. 8. Published by the University at Austin, Texas.

This bulletin supplies a complete outline of a course of study in manual training for the high schools of Texas. The book suggests three groups of courses: (a) A two-year course in mechanical and freehand drawing, bench woodwork and carpentry. (b) A two-year course adapted for extension into a three-year course to include freehand and mechanical drawing, bench woodwork, architectural or machine drawing, forge work, sheetmetal work and machineshop work. (c) A four-year course in drawing, woodwork, forging, machineshop work, art metal work, sheetmetal work, patternmaking and molding. In addition to the outlines for each of the courses, the pamphlet contains some carefully drawn up lists of equipment, bibliographies and general suggestions.

Brush Drawing, Pen Drawing, Landscape Drawing (Pencil), Object Drawing (Pencil).

By Leon W. George. Four books, 16 pages; 10 cents each, 13 cents by mail. St. Louis News Company, St. Louis, Mo. American News Company, New York.

These books were prepared especially for the general drawing book trade, but they will be very helpful to Drawing Teachers and Superintendents who may feel the need of supplementary work.

Each book has a three-color poster cover and contains fifteen good examples of drawing arranged in progressive form.

Each drawing shows the professional method of rendering, whether with pen, pencil or brush, thus making them very desirable books for the ambitious and growing student. The pencil and brush drawings are good examples of offset printing.

Home Course in House Planning and Furnishing.

By Charlotte Wait Calkins, Director of Art, Grand Rapids, Michigan. Scott, Foresman & Company, Chicago, New York.

This course in House Planning and Furnishing is designed to afford means for the application of art principles pertaining to the house.

The course offers a series of problems beginning with the study of plans for a cottage home, and carrying the pupils thru a study of the exterior elevations, gardens and home grounds and the interior finish, furnishings, etc. Numerous illustrations are given of good and inferior design for comparison.

Standards and Conventions.

By Frank R. Kepler. 37 pages. Published under authority of the Board of Education, Detroit, Mich.

This pamphlet presents in concise form a discussion of the standards and conventions obtaining in a large number of drafting rooms in industrial establishments of Michigan. The pamphlet has been prepared as a guide for teachers of mechanical drawing in the Detroit high schools. It is not intended as a textbook, but rather as a reference book to guide teachers in their instruction and classroom practice to the practice obtained in the best industrial drawing rooms. The series of plates include practical methods for laying out sheets, for arranging title blocks, bills of materials, for lettering, for assembly drawings, for dimensioning, for section views, threads, etc. Several interesting plates of standard tables and directions for checking drawings are added. The pamphlet is an interesting illustration of the methods which teachers should adopt in relating their work closely to actual work in the industries. The plates shown are themselves good examples of careful drawing and lettering.

School of Practical Electricity.

Book III. By O. Werwath. Cloth, 282 pages. Price, $1. Electroforce Publishing Co., Milwaukee.

The earlier volumes of this series have been mentioned in these columns. The present book takes up wiring for electric light service. The treatment is systematic and complete and excellent laboratory experiments and quizzes are provided.

Atlantic City School Bulletin, March, 1916.

Printed by the Vocational School Press, Atlantic City, N. J.

This pamphlet contains significant extracts from the annual report of the superintendent of schools and is intended for distribution to the public. It is well arranged and carefully printed.

Training of Vocational Teachers. Reprint from the Seventy-ninth Report of the Massachusetts Board of Education, Bulletin No. 7, 1916, Board of Education, Boston. The pamphlet takes up the problem of improving the quality of teaching in state-aided vocational schools, advising and counselling individual teachers in the development and organization of special lines of instruction, an analysis of principles upon which vocational instruction is based, work for women and girls, and a special study of current conditions in state-aided industrial schools.

Continuation Schools in Massachusetts. Bulletin No. 6, 1916, Board of Education, Boston, Mass. Reprint from the Seventy-ninth Report of the Massachusetts Board of Education. The pamphlet discusses the functions which compulsory continuation schools are intended to perform for the minors designated by law, the course of study, the practical results of continuation school attendance, assignment and transfer of students, securing jobs for pupils out of work and keeping them off the streets during non-employment, the influence and work of the director of continuation schools, co-operation of home and employer, follow-up work, the problem of securing suitable teachers, and the future developments of these schools.

Horses and Cattle. Instructor Literature Series No. 271. By Charles Sumner Plumb. 30 pages. Price, in paper covers, 5 cents. Published jointly by F. A. Owen Publishing Company, Dansville, N. Y., and Hall & McCreary, Chicago, Ill.

NOW, ARE THERE ANY QUESTIONS?

This department is intended for the convenience of subscribers who may have problems and questions which trouble them. The editors will reply to questions, which they feel they can answer, and to other questions they will obtain replies from persons who are competent to answer. Letters must invariably be signed with full name of inquirer. If an answer is desired by mail, a stamped envelope should be enclosed. Address, Editors, Industrial-Arts Magazine, Milwaukee, Wis.

Books on Architecture.

438. Q.—Could you inform me where I can secure a book or books showing both German and Swiss styles of architecture in the building of homes?—*J. F. K.*

A.—Bruno Hessling Co., 2 West 45th St., New York, N. Y.; G. E. Stechert & Co., 151 West 45th St., New York, N. Y.

Books on Carpentry and Building.

439. Q.—I should like to know where I can get some good book on carpentry.—*V. L.*

A. *Practical Houseframing*, by Albert Fair, $0.50, Industrial Book Co., New York; *Practical Carpentry*, by Radford, $2, Grand Rapids Furniture Record, Grand Rapids, Mich.; *Carpentry Teachers' Handbook*, by King, $1, Building Age Book Dept., New York; *Problems in Carpentry*, by L. M. Roehl, Webb Publishing Co., St. Paul, Minn.; *Carpentry for Boys*, by J. Zerbe, World Book Co., Yonkers, N. Y.; *Carpentry for Boys*, by G. B. Kilbon, $0.75, Lothrop, Lee & Shepard, Boston; *Constructive Carpentry*, by C. A. King, Manual Arts Press, Peoria, Ill.; *Carpentry*, by Gilbert Townsend, $1, American Architect, New York; Radford Architectural Publications, 178 W. Jackson Blvd., Chicago.

447. Q.—I have mahogany furniture inlayed with holly. By applying bichromate of potash, the holly turns yellow. I want it to remain white. Will you kindly tell me what to use? How do you mix and apply the lime for darkening mahogany?—*W. B.*

A.—Previous to inlaying, the holly should be bevel-sawed ready to insert, and then soaked thoroly in a very dilute solution of white shellac and alcohol (water thin). The strips should then be dried thoroly and inlayed as usual. If this is done there is no danger of staining and a whiter finish will result. In the case in question, however, the only alternative left is to pencil on very thin white shellac with a striping camel's hair saber, being careful not to let the shellac lap over on to the mahogany; in which case the part affected will be lighter after staining. It will be necessary to scrape down the wood until the holly shows up clean and white and then follow the method advocated.

In preparing the lime solution it is necessary that fresh lump lime be used. Put the lumps in an earthenware or glass receptacle, cover the lumps with boiling water and after the lime has slacked, add plenty of boiling water. Stir well and let settle. After 24 hours pour off the clear liquid and try on a sample panel. The full depth of the tone will not show up until 24 hours have elapsed. If too dark dilute the solution to the desired density. Dry the wood; wash with vinegar.—*Ralph G. Waring.*

Fuming Wood.

Q.—Mr. Waring seems to get rather unusual results in the fuming process. Is not the use of pyrogallic and tannic acids rather out of the common in the fuming of woods? Personally, I have much difficulty in getting white oak to take a dark enough tone by the use of ammonia, even when sponged on and fumed in an air-tight case for several days, changing the solution frequently.—*J. I. S.*

A.—I am afraid the questioner has given my directions only a superficial reading and has an idea of the formula, amount and methods. What he failed to read was the last remark concerning the amounts of acids to be used. "Denser solutions, of course, will give darker colors." I suggested a weak solution capable of producing a standard light shade; if darker colors are desired the amount of acids should be increased.

As to the unusual or "out of the ordinary use of pyrogallic and tannic acids," suffice it to say that my laboratory research in this line has proved conclusively that this is the only practical procedure for producing the browns by the fuming process. Other chemicals are too expensive to use in the factory.

Prof. W. K. Schmidt, the only other American chemist to handle research in this direction, has reached conclusions identical with my own.

The only trouble the present correspondent is having in getting a dark color lies in the fact that he should increase the acids to 1½ ounces each per gallon of water and absolutely avoid sponging on the ammonia. If he will follow the previous directions explicitly he should experience no trouble.

Practically, I have applied this process in putting efficiency methods into several prominent furniture factories, and have used this system of fuming standing trim in houses and public buildings.—*Ralph G. Waring.*

Miscellaneous.

450. Q.—Will you please send a list of books or pamphlets dealing with work in the grades on soldering, basketry and venetian iron work—*L. N. C.*

A.—Ashley's *Basketry as a Fine Art*, $2.10, Miss Gertrude Ashley, Deerfield, Mass.; Karlson's *Elementary Basketry*, $0.75, Milton Bradley Co., Springfield, Mass.; Blanchard's *The Basketry Book*, $2, Charles Scribner's Sons, New York; Tinsley's *Practical and Artistic Basketry*, A. S. Barnes Co., New York; Hasluck's *Basket Work of All Kinds*, Cassell & Co., New York; Okey's *Art of Basket Making*, $1, Pitman & Sons, New York; Marten's *Inexpensive Basketry*, $0.25, Manual Arts Press, Peoria, Ill.; Knapp's *Raphia and Reed Weaving*, $0.50, Milton Bradley Co., Springfield, Mass.; Webb's *Basket Making*, $0.25, Milton Bradley Co., Springfield, Mass.; White's *How to Make Baskets*, $1, Milton Bradley Co., Springfield, Mass.; James's *Practical Basketry*, $1, Milton Bradley Co., Springfield, Mass.; Hobart's *Soft Soldering, Hard Soldering* and *Brazing*, $1, D. Van Nostrand, New York; Compton's *First Lessons in Metalworking*, $1.50, John Wiley & Sons, New York; Day & Leland's *Bent Iron Work*; Erskine's *Bent Iron Work*; Hasluck's *Bent Iron Work*, Cassell & Co., New York; Mills's *Bent Iron Work*; Morse's *Venetian Iron Work*, $0.25, A. Flanagan Co., Chicago.

Course in Drawing.

451. Q.—Have you an elementary course of instruction in architecture that you offer either thru the pages of your valued journal or in correspondence instruction form applicable for manual training department work?—*L. N.*

A.—We know of no correspondence course in architectural drawing and elementary architecture adapted especially to prepare teachers of the subject. Splendid general courses are offered by the International Correspondence Schools, Scranton, Pa., and the American Correspondence School, Chicago.

A Painters' Magazine.

452. Q.—I live in the country and do quite a little interior decorating during the spring months, also some outside painting. Can you tell me of some magazine or magazines that treat of such work in a way that would be helpful to an amateur? Would there be any publishers who would furnish special information or advice if requested, such as you furnish the readers of the *Industrial-Arts Magazine?* —*C. L. J.*

A.—The Painters' Magazine, 100 Williams St., New York City, (subscription, $2 per year) will perhaps serve your purpose best. It is a good all around painters' and decorators' publication and devotes some space to industrial education. It has an excellent department of questions and answers.

A Teacher's Contract.

453. A manual training teacher has entered into a written contract with the school board of the city of Blank, Wis., wherein he was employed to teach in the public schools of that city for the school year commencing September, 1916, for which he was to receive as compensation $1,300. The contract was signed by both parties and it is assumed to be in all respects valid and binding. A has since received an offer to teach in another state at a much higher compensation and has asked to be relieved of the contract entered into with the school board of Blank. Question: Can he be compelled by such school board to carry out his contract?

According to the generally accepted ethics of the teaching profession, A is committing an unprofessional act if he refuses to carry out his contract with the city of Blank and without a release accepts a position in another state. On the other hand the school board of the city of Blank is unreasonable if it refuses to release A because it is not impossible in June to find satisfactory teachers of elementary shopwork in the State of Wisconsin.—*Mng. Ed.*

A reply to the legal aspects of the question is as follows: The above contract is one calling for personal services and the law is well settled that the enforcement by injunction of a contract for personal services will not be decreed unless the services belong to a class that may be called unique, individual or extraordinary. Eureka Laundry Co. v. Long, 146 Wis. 205.

Services to be performed here are that of teaching, which are not unique, individual or extraordinary within the meaning of the decisions establishing this rule, as other parties can be secured to perform the same services, and the law does not, therefore, grant the right to specifically enforce the performance of such a contract by a decree.

The only method in which such a contract could be enforced if the law permitted it, would be by an injunction restraining A from entering into any similar contract during the period of time mentioned in his contract with the school board. This sort of an injunction, however, is not granted unless as stated above, the services are unique or extraordinary.

From the foregoing the conclusion must be reached that the contract is one which cannot be specifically enforced and the only remedy of the school board would be a suit for damages for breach of contract which, no doubt, would be no more than nominal damages.—*C. F. M., Attorney.*

Engineering Drawing.

454. Q.—Do you publish French's "Engineering Drawing?" What is the price of this book? If you do not handle it will you please tell me where I can secure a copy? —*A. E. A.*

A.—French's "Engineering Drawing" is published by the McGraw-Hill Book Company, New York. The price is $2.

Naval Architecture.

To the Editors: Answering the inquiry made in the June number by L. C. H. regarding books on Naval Architecture, kindly permit me to suggest the following:

Theoretical Naval Architecture. By Atwood. $2.50.

Elements of Yacht Design. By N. L. Skene. $2.

How to Design a Yacht. By C. G. Davis. $2.

These books may be obtained by writing to the Rudder Publishing Company, 254 W. 34th St., New York City. —*Hilding Froling, Teacher of Shop Work, New York City.*

SHEET METAL APPRENTICES.

The first class of sheetmetal apprentices at Bradley Polytechnic Institute recently completed a year's course under the direction of Mr. Arthur F. Payne.

The class was formed in September, 1915, at the instance of the Peoria Sheetmetal Contractors' Association, and met twice weekly for a two-hour period. The twelve students each paid a fee of $25, one-half of which was returned to each of the ten who completed the work in June, 1916. The contractors' association supplied the metals used by the class and the Bradley Institute furnished the equipment, etc. The work was divided into fifty distinct lessons in sheetmetal and pattern drafting and included lectures and demonstrations in the physics of soldering appliances, the chemistry of fluxes, metals, etc.

Thirty problems were required of each student as follows:

(1) One elbow, four demonstrated; (2) one offset elbow; (3) tee joint, angle specified; (4) off center tee joint, angle specified; (5) some form of truncated cone in form of hopper or shield; (6) reversed transition piece, five demonstrated; (7) finial or pillar cap, three demonstrated; (8) gutter, angle specified; (9) rain pipe header; (10) register box, four demonstrated.

(11) Furnace pipe boot, three demonstrated; (12) transition boot-round to rectangle, two demonstrated; (13) drip pan, three demonstrated; (14) pitched cover, three demonstrated; (15) steam table pan; (16) spiral conveyer; (17) one piece problem, elementary, four demonstated; (18) one piece problem, advanced, five demonstrated; (19) curved moulding, three demonstrated.

(20) Auto fan housing; (21) auto dash board, three demonstrated; (22) oval ships ventilator; (23) sphere, five demonstrated; (24) auto seat, three demonstrated; (25) auto fender, three demonstrated; (26) skylight work-curb miter; (27) skylight work-common bar; (28) skylight work-jack bar; (29) skylight work-hip bar; (30) skylight work-cripple bar.

SCHOOL CRAFT CLUB.

The closing meeting of the year's work of the School Craft Club took the form of a testimonial dinner to Prof. William Noyes, who is leaving Teachers College to become Director of Manual Training at Duluth, Minn. The dinner was also a ladies' night affair, being the first time that the club has held a ladies' night.

After dinner several men who had known Prof. Noyes for many years spoke of what he had done for manual training. Messrs. Wm. Vroom, A. W. Garritt, E. G. Traua and M. W. Haynes spoke of various ideas that had been advanced by Prof. Noyes, of his boundless energy, enthusiasm and sincerity with which he took hold of every problem.

Prof. Noyes has been a wise counsellor and advisor and help to the older manual training men in and around New York and a leader, developer and helper to the younger men who have studied under him. Speaking from personal experience and from my acquaintance with others Prof. Noyes has been an inspiration to everyone who has studied under him. Earnest, sincere and a tireless worker, he has inspired hundreds of young manual training teachers who have been his students during his long connection with Teachers College.

The following officers have been elected for the year 1916-17:

President—Merritt W. Haynes, Principal Bayonne, N. J., Vocational School.

Vice-President—E. G. Traua, Principal Hoboken, N. J., Vocational School.

Secretary—James McKinney, The Ethical Culture School, New York City.

Treasurer—William A. Carter, Public School 90, Queens, New York City.

William A. Carter.

The board of education at Ann Arbor, Mich., has purchased equipment for a new woodworking room and has employed two additional instructors for manual training classes. The additional equipment offers a wider range of work in both the high school and grades. A plan has been formulated thru which students may specialize in certain lines of study. The department is under the supervision of Mr. J. B. High, formerly of Dayton, O.

The Department of Art of Milwaukee-Downer College, Milwaukee, Wis., has issued a suggestive pamphlet describing the work of the students during the past year. The department aims, first, to provide an adequate art school for those wishing to make the study of art a profession, and second, to provide an opportunity for students while pursuing a college course, to cultivate an appreciation and understanding of art.